MIND and WORK Series — 7

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HOW TO TRAIN YOUR MIND FOR STUDY AND SCIENTIFIC WORK

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HOW TO

TRAIN YOUR MIND

FOR STUDY AND SCIENTIFIC WORK

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PREFACE

THE PRESENT WORK is an effort to present in orderly fashion the various norms which have been proved useful by reason and experience in the matter of study and research work. It is published to fulfil the desire of the student who would like to have, in a handy volume, a record of the various conclusions reached in the study of methodology. And such a record would seem to be necessary, since in lectures on methodology much information is imparted which can scarcely be noted down with accuracy during class. These pages, therefore, are destined chiefly for students; in a sense they are the result of their requests and their needs.

The Author

St Joseph's Pontifical College
Alwaye
January, 1971

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INTRODUCTION

THE METHODIC formation of the student is one of the means to success in his studies. Many average intelligences, and the majority are such, succeed in obtaining worthwhile results by dint of constant and methodic work. While many of the more gifted fail through a pitiful waste of time or through not making full use of their talents, because their work lacks method.

One must be deliberately methodic in one's work and follow the norms which both reason and experience have proved efficacious. There are, of course, self-educated men who are naturally methodic in their work. But the contrary is more frequently the case: the self-taught man usually suffers the consequences of a lack of method.

This does not mean that in study and intellectual work method is everything. It would be wrong to attribute all differences in scientific results to a difference in method. Method supposes intelligence; it does not create it. Neither does it give one those bright intuitions which characterise genius. Presupposing intelligence, then, method enables one to reach truth more readily, with less waste of energy and less danger of error. As Collin rightly notes: "It is not enough to be intelligent; the chief thing is to make a good use of it. Generally speaking, one can get nowhere without method. If the method is a bad one, it results in some useless work and sometimes even injures the mind. A good method, on the other hand, disciplines the mind and 'other things being equal' leads it to the truth with a minimum of effort. The history of the sciences testifies that progress made has always been due to the ever more rigorous application of the methods proper to each one of them."[1]

Division of our book

The division of our book is suggested by the different types of intellectual work in which students are normally engaged: 1) study of a general kind and 2) work of a more strictly scientific nature. In the first part we will give some norms which experience and science have proved to be useful for the formation of the mind. We take for granted that the general laws governing the workings of the mind and correct thinking are already known. Logic and general knowledge give one a sufficient grasp of these.

In the second part we will give those norms which have come to be classical through their continued use in research work. They are the norms of correct procedure in any strictly scientific work. In the field of scientific methodology, there are particular norms proper to certain sciences and these are called "special methodologies", v. gr. juridical methodology, mathematical methodology etc. We will give the general norms, *general scientific methodology*, applicable to all types of work.

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[1] Collin *Manuel de Philosophie Thomiste* 2 Vol. (Paris 1932) n. 518.

Chapter 1

STUDY: ITS NATURE AND PURPOSE

To some, perhaps, it will seem superfluous to investigate the nature of study itself. They think that study is simply the effort to learn; it is identified with the process of accumulating knowledge. The truth is that neither the work of study nor the process of learning can be defined in such simple terms. If one's attitude to study is to be correct and application to it fruitful, it is necessary to have an exact conception of its nature and purpose.

Study and personal formation

The aim and purpose of study is man's interior and exterior formation. This, however, is not achieved by aiming merely at erudition, it is also a work of assimilation.

Efficacious intellectual work is that which, besides giving erudition, forms the mind by quickening its comprehension, strengthens the will and the memory and enables a man to make good use of his knowledge in the various circumstances of his life. That intellectual work, on the other hand, is ineffective which provides a certain amount of knowledge, but leaves the faculties undeveloped; it turns the student's head into "an amalgam of what others have thought, spoken or written", but opens up no horizons, does not enable one to think, speak and write for oneself.

If we examine this from the point of view of the purpose of education, we come to the same conclusion. Mere erudition and technical preparation are not the whole purpose of education. Frequently we read judicious observations from eminent educationalists, criticising the results of education: men are merely erudite instead of being wise, they possess a great deal of cultural and technical information, but cannot use it in circumstances not immediately connected with the class or their textbook.

The purpose of education is man's formation, not merely information. On finishing one's education, it is not only what one knows that is important, but also what one *is:* it is not so much the number of books read that counts, as the type of book one is now inclined and able to read; it is important not only to be well-informed concerning the philosophical and religious outlook of others, but to have acquired for oneself, too, the proper attitude towards life and society.

Life is not merely knowledge; the world demands something more than that. It requires a serene mind, sound judgment and a strong will. Study taken in the right way is an efficacious means to all three of them. Such study not only makes one erudite and possessed of a broad culture, it gives the mind strength, clarifies ideas, enables one to think for oneself and forms attitudes and ideas that model and orientate one's whole life.

Study: An interior mental process

To study is to learn something. Learning, however, implies two operations: understanding and retaining what has been understood. Both operations suppose an interior process of all the mental faculties, especially the intellect.

What does *understanding* a thing involve? Thomas Aquinas when explaining the relationship between teaching and learning, answers the question well: "One person is said to teach another inasmuch as, by signs, he manifests to that other the reasoning process which he himself goes through by his own natural reason. And thus, through the instrumentality, as it were, of what is told him, the natural reason of the pupil arrives at a knowledge of the things which he did not know".[1] The thinking faculties of the learner, then, are the cause of the knowledge. Understanding includes two elements: one objective (truths, facts and arguments), the other subjective (the assimilation of these). One may be said to understand only when his mind has assimilated the truth, when he sees the inner meaning of something.

This determines the relation existing between the understanding of something and the book or teacher helping towards this understanding. This book and the teacher are helpers or, if you like, stimulants to knowledge; they propose the data and the arguments; they even show the order in which the premises lead to the conclusion. But they cannot take for the student the second step—that of assimilation; they can show him the way to wisdom, but they cannot make him drink its waters. His own personal interior activity is necessary for that: the internal process of affirming, denying and assimilating. Only then does he *really* know. He does not know, for instance, that a lie is a sin when he only reads it or *remembers* seeing it in a book; he knows only when he sees it as a logical conclusion; when he knows *why* it is so. Otherwise he will possess what others know, but will not really know it himself.

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[1] De Veritate, XI, 1.

The mind, they say, must take in knowledge and work on it, just as the body does with food. Through the process of assimilation the body works on the food it takes in and makes it part of itself. So, to know properly is not *merely* to learn bare facts or a succession of arguments and to remember them; it supposes that one works on them to discover the reasons for the facts, or the internal structure of the arguments and to admit them so that they become part of oneself—part of one's convictions and, ultimately, of one's life. Then one may forget where and when he studied something, or how it was worded, but the truth is already there as *one's* possession.

The second operation, *retention*, could be analysed in the same way. But we shall treat of that when we come to speak of the utilisation of the memory.

Study: A gradual process

The process of acquiring knowledge is a gradual one. It must be so, "for man is no angel, able to see in a flash all the implications of a single, given idea; on the contrary, man can collect his ideas themselves only gradually from successive experiences and co-relate one idea with another".[1]

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[1] WHITE, *How to study*, 13.

On this account learning takes time. No complex idea or complex perceptual experience is fully comprehended, nor its rational elements completely analysed, at the first presentation. Growth in knowledge is a slow process, especially in the early stages. But it is a continuous and steady one.

So time is an essential factor in learning. And patience too: patience with the routine that builds knowledge, patience to go slowly and deeply rather than quickly and superficially.

Study: An active personal process

From what we have said so far, it is obvious that if study is to be efficacious it must consist of personal active work.

Working personally does not mean working independently of books and the accumulated findings and ideas of past generations. In the animal kingdom there is no use made of the experiences of preceding generations and for that reason there is no progress there. In this sense every animal is a first animal. The man of today, on the contrary, does not have to start from scratch; he inherits the knowledge of his ancestors and the fruit of their experiences. This is the rational creature's prerogative, the secret of his progress. Nor does personal work mean working alone without the aid of a teacher. If that were the case, the road to knowledge would be a slow and wearisome one and hazardous as well.

To work personally is to approach and to utilise the results and contributions of others actively and with reflection. One must penetrate the intimate cohesion of other people's affirmations, examine the strength of the arguments which support them and relate them to the truths already possessed. This involves a process of keen mental activity. The passive idea of study as "sitting before a book and learning words" until they can be repeated is wholly inadequate. It does not produce knowledge.

True knowledge is the product of personal mental activity. Even the most efficacious methods and the best books are incapable of adding one grain of real knowledge to our mind, if this remains passive. "All that teaching does is to provide us with the means of mental activity, as medicine offers our bodies the means of getting well: but just as no medicine can act on an inert organism, no teaching can succeed with a negligent mind".[1]

Method in study: Do personal work

There is one word of advice to the student which springs spontaneously from our observations so far and which we could formulate thus: *Do personal work.* One must avoid those aids which are unnecessary and serve only to lessen or suppress personal activity. Summaries made by another, detailed solutions that do away with reflection, and, in the case of linguistic studies, full translations. A personal summary, for example, of a thesis in philosophy or of some period in history gives you a living conception of the problem or period in question when you do it yourself. A personal translation, likewise helps you to enter into the secret of the original language and become familiar with its peculiarities.

This method will, of course, be slow at times, but its results are more authentic and lasting: moral and intellectual formation and true knowledge. It can sometimes happen, too, that a crowded study-programme or the urgency of examinations necessitates the use of more expedite means which render the work easier. Even then, such means should be only the complement of the fundamental task; study should continue to be done essentially according to the personal activity method. Because, only by following this method does study result in the development of the faculties, man's all-round formation and the acquisition of sure knowledge—knowledge that bears the satisfying stamp of assimilated truth.

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[1] SERTILLANGES, *The Intellectual Life*, 122.

Chapter 2

OUR STUDY FACULTIES

I. MIND, WILL, FEELINGS AND EMOTIONS

STUDY is an activity of the whole man. All the soul's faculties, all the energies of the body take an active part in it. Its greater or lesser degree of fruitfulness will depend on their functioning properly.

1. The mind

Good study is that which enriches the mind with new ideas, makes for clearer perception and quicker understanding. The perfection and control of mind is one of the aims of intellectual work and at the same time one of the means which make it effective.

With regard to the mind, it is sufficient to note at this point that it is capable of improvement in its manner of observing and reasoning and in its ability to associate ideas or arrange them logically. There are certain mental peculiarities and defects which render concentration and exact observation difficult. Some minds, for example, are affected by automatism, others have difficulty in associating ideas. To this latter class belong muddled thinkers, the frivolous and the absent-minded. There are also minds that are completely overpowered by the force of the imagination or emotions. Sustained effort and continual application to different subjects are an efficacious means of correcting such defects and giving the mind balance and control.

Another important factor concerning the mind is the variety of ways in which ideas succeed one another. Not all minds are cast in the same mould, and ideas are not associated in the same way in every mind. Some—the intellectual type—grasp the abstract connection between ideas spontaneously, while others—the sensory representation type—have great difficulty in getting away from the concrete elements of their ideas; the abstract escapes them while the form, colour etc. of the objects represented by the ideas make up the basis of their mental associations. Finally, there are those of the affective representation type, in whom ideas are organised according to feelings or emotions which set up invisible emotional links between ideas and things.

For progress in study, it is useful to know in which of these ways our mind tends to associate its ideas: this helps to develop a natural bent or to correct defects. It is not good to be a slave to one way of thinking. And, fortunately, we are capable of reacting against the predominant tendency in the association of ideas and of directing them along more healthy lines. A diligent study of *all* the subjects on a curriculum is an effective means of developing latent elements in our intellectual capacity and of bringing about the harmonious fusion of the various ways of thinking. Control of ideas and flexibility in the use of the ways of thinking according to the needs of the moment are very valuabe assets to anyone engaged in intellectual pursuits.

2. The will

Another faculty that has great influence in our cognitive activities is the will. It plays its part in the matter of attention by focussing thought on a particular subject and rejecting distractions. It can direct the memory in its function of summing up old data and integrating what is new. The will offers the necessary motives for the effort entailed in constant study. It influences the affective states by cultivating those which favour study and checking those that might prove an obstacle.

Owing to this influence, the training and control of the will is obviously of great importance to anyone engaged in studies. In the first place, it is undeniable that strength of will admits of degrees: we refer to some as "strong-willed" and to others as "weak-willed". It is a fact of daily experience that some men thrive on difficulties and obstacles, while others deviate in the face of them. There are men who do not seem to have any will at all: the automatons—borne along by internal and external impulses—and the amorphic ones, completely lacking in personal initiative, slaves of their own passions or of those about them. In others the strength of will is insufficient; they lack perseverance, firmness and decision.

All these defects, and we do not include pathological states, weigh as so many obstacles on a life which requires application, as that of the student. They show themselves as soon as there is need of deliberate concentration or recollection. It is impossible to apply oneself constantly to fruitful study without a strong and controlled will.

For these reasons, the student must *train* his will. Like any other psychic power, the will can be developed and perfected. The ideal is to achieve an integrated will: stable in acting according to the principles of moralityand capable of sustaining deliberate, systematic and enduring effort.

The training of the will supposes the presentation of an attractive ideal, the continual and vital presence of the good things and values that can move the will. It supposes, besides, the conscious activity of the will itself. Repeated acts of the will, graded according to its relative strength, will give one the mental energy needed for clear and constant decision.

The programme of discipline and study in the student's life offers him many opportunities for the conscious and constant exercise of the will and in this way provides opportunities for its perfection.[1]

3. Feelings and emotions

There is nothing more obvious than the influence our affective states have on our lives. It is enough to recall how we are influenced by such familiar emotions as fear, anger, sadness, elation or dejection. In study, they can narrow the field of consciousness to the point of rendering concentration on anything else impossible, they can cause mental fatigue, weakness or psychosomatic diseases.

Passions, or emotions, are a *force* that God gave us in order to act and to will things more forcefully and with greater constancy. But, like all powers, they must be controlled and directed through the proper channels. It is we who must rule our emotions and not they us. A serene mind, undisturbed by emotions and master of them, can give itself to study in a way that assures maximum efficiency.[1]

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[1] Cf. R. De Saint-Laurent, *Will Power* (Dublin, Aubanel, a.s.) 21-59; P. Siwek, S.J., *Experimental Psychology* (New York, Wagner' 1959) 182 293; N. Irala, S.J., *Achieving Peace of Heart* (Allahabad, St Paul Publications, 1957) 49-60; 123-132.

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II. MEMORY

Memory, the power to register ideas and images and recall them, is one of human nature's most wonderful faculties. For the student, it is something of the greatest importance; without memory there is no study, no culture. Memory is not everything, of course; it is not even the principal thing. It would certainly be disastrous to place more confidence in it than in the intellect. The intellect is the queen; memory, the slave. Nevertheless, it is certain that a quick, well-stocked and tenacious memory is invaluable.

Memory's efficiency is related to the double process of learning something and forgetting it. Some minds require a great deal of effort to master a thing, but they have the power of retaining it longer and with greater accuracy than those who learn quickly and soon forget. The efficient memory that acquires things quickly and holds them safely is obviously the ideal. The efficiency of the memory can be improved both in its way of memorising and in its way of retaining what has been memorised.

1. What must be memorised

Many things must be memorised. "What we commit to memory, that we know" says Cicero. But the question is: what must be memorised: the idea or the words that express it? The reality or the symbol? The fact and the theme or their literal enunciation? The spirit or the letter?

In the sciences, as in life, there are quite a number o things one must remember verbatim: definitions, formulation of principles, technical formulae, numbers, places, names, vocabulary. All these elements, whether on account of their *expression* value or for the sake of erudition, oblige us to make the effort of memorising them verbatim. But verbatim retention has its limits. It is not always necessary, nor even useful. Memory is not a substitute for a book. There are somethings we are personally not obliged to know; it is enough in these cases to know where to find the relevant information.

What will evidently be always necessary is to retain the substance of truths and things: data and arguments independently of their literal formulation; the true connection between facts, though one may be unable to express them exactly as one might have heard them expressed.

2. How to memorise

There is a *mechanical way* of committing something to memory, a mere parrot-like repetition designed to commit a form of words to memory, depending on primary associations. This is the classical "memorisation by rote". In the case of primary school children this method is useful; but for higher adult study it is pernicious. It is a waste of time and energy which could be used to deepen one's knowledge and advance in study. Besides, it causes an aversion for learning itself and gives poor results, since the rate of forgetting is very rapid for material learnt parrot-wise.

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[1] Cf. Siwek, *op.cit.*, 261-581; Irala, *op.cit.*, 61-86.

But there is an *intelligent way* of learning by heart, too. It is an effort to memorise which makes use of all the human faculties beginning with the intellect. In rational beings, memory—sensory as well as intellectual—is far from being a mere process of mechanical repetition. In man, memory and active thought are closely related. Memory means understanding, selection, coordination.

This suggests the first rule in memorising: memorise after understanding. Whether it is a case of having to retain some thing verbatim or of learning only the substance, one must first understand the meaning of what one must learn. Then comes the organisation, the grouping, the coordination of images, words, facts or ideas. One must seek out and emphasise their logical connections and the common links that unite them; he must see the resemblances and the differences, make secondary associations and, whenever possible, associate the new ideas with already well possessed knowledge.

When the material to be learnt does not make sense, the use of artificial devices may be possible in order to create more or less artificial associations that can serve as substitutes in the absence of natural ones. That is the origin of mnemonics. The methods of utilising what is called local, visual or auditory memory are well known. Another aid is the use of meter and rhythm. It is, however, inadvisable to depend on mnemonics when a natural or rational basis can be found for the retention of things. The use of memory must depend more on thought than on words. In any case, when these artificial association are used, they should be as rational or near-rational as possible.[1]

3. Some conditions affecting retention and effective recall

a. *Positive conditions*

The following are of special interest:

Vividness of stimulation. The more vivid the impression, the longer is the retention likely to be. What is particularly striking, especially if accompanied by a certain intensity, may impress itself on the memory once and for all.

Ideas and experiences are impressive in the degree to which the stimuli are clear and received by us without distraction. Also in the degree to which they affect as many sense organs as possible and appear grouped rather than isolated. Hence the necessity of studying in the proper physical and mental conditions, of studying with all our senses and with mental concentration, and of finding logical connections in the object of our study. Finally, vividness of impression is a question of interest; what strikes one person, leaves another entirely unmoved.

Interest-Motivation. Motivation is an important factor in remembering and recalling. Higher or lower motives for learning are frequently responsible for the difference in intellectual improvement among students of the same intelligence quota. The same may be said of the influence of interest. We remember what we "want to remember and often forget not only what time makes us forget, but also what we want to forget. Interest here means both interest in the material and interest to remember: zest for learning and clear intent to remember. This explains the effectiveness of "active recall". "Active recall", i.e. the attempt to reproduce as soon as possible what is to be memorised without the help of a copy, is far more efficacious than mere passive repetition from the copy, because it exercises better the interest in learning.

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[1] Cf. R. De Saint-Laurent, *Memory* (Dublin, Aubanel, a.s.).

Repetitions. Other things being equal, the power of retention and recall increases in proportion to the frequency with which an experience is repeated. Each repetition, accompanied by the effort and intent to learn, deepens the impression made on the mind and thus makes a thing easier to recall.

The rate of forgetting is high in the first stage of learning—we forget the greater part of any material immediately after the first contact—and then declines rapidly. In the absence of recapitulation and systematic revision, what is taught in one class is partially forgotten before the next and three quarters of what was taught in the first term is already forgotten by the beginning of the second.[1] So, in the initial stages of learning, recapitulation and revision should be frequent; later on the subject matter may be revised less frequently. In the earlier stage of memorising, false associations of ideas or incorrect assumption of data should be carefully avoided.

Repetitions should be continued till one reaches the stage of *overlearning*, that is, "the learning process must be

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[1] A. Pinsent, *The principles of Teaching-Method* (London, Harrap, 1956) 279.

continued well beyond the critical point at which the material learned can just be recalled, or the task just accomplished with effort".[1] To stop learning when one is barely able to reproduce the material correctly is not sufficient. The next moment, the process of forgetting begins and one is not in a position to recall.

Since psychological experiments seem to indicate that no idea or experience is lost to man, we may conclude that the impressions and ideas are there, but they have fallen below the level at which they can be recalled at will. This explains that state so familiar to students: "I knew it but I cannot remember it now." A few more repetitions would have brought the impression to the level of deliberate recall.

b. *Negative Conditions*

Fatigue, boredom. These affect clear thinking and interest. To prolong memorising sessions when one is already tired or to practise repetitions in an attitude of boredom is useless and frequently harmful.

Distributed effort; Reminiscence. Revision and repetition should have the help of time and natural development, as factors of long retention in important and difficult subjects. "Cramming", that is, brute memorising by concentrated and constant effort, is not advisable when the subject matter is important and has to be retained for life or at least for a very long time. Spaced and regular repetitions, and steady effort is the best method. In massed study periods, there is a danger of fluctuation of attention, a lessening of interest and increased resistance to repetitions within the organism itself. "Cramming"—as students who cram before an examination know from experience —causes fatigue and arouses aversion for the subject. Besides, what is learnt by cramming is soon forgotten.

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[1] Cf. Pinsent, *op.cit.*, 293.

The general principle, however, that spaced study is more effective than continuous or unbroken study is not universal in its application. The study of the same subject should not be so spaced as to prevent a proper connection of ideas. Quick revision is necessary, especially in the earlier stages of learning. Secondly, the succession of the different kinds of study should be well combined in order to avoid the phenomenon of retroactive inhibition.

Retroactive inhibition. Retroactive inhibition is the interference of a mental effort with a previous one. An intense mental effort made immediately after a study period, especially if it concerns similar matter, interferes with the previous ideas; it does not permit their proper consolidation. So a concentrated effort on a subject should be followed by relaxation or by an occupation or subject different from the previous one.

That is why in teaching institutes a short interval is always allowed between classes. This interval is not only to give the pupil a rest but also to give the subject matter of the previous class time to settle, so as not to be disturbed by impressions of a similar nature coming immediately afterwards. That is also why a thing learnt at night remains more firmly impressed on the memory; sleep gives ideas time to settle in peace, free from the disturbance of the crowded impressions and ideas of the daytime.

4. Conclusion: Practical method of learning by heart

A good method must contain the following phases:

a. *Preparation of the material to be memorised.* This consists in an attentive reading and analysis of the whole piece. One's aim in this must be to understand the sequence of thought and the logical relations or associations which it may contain. If there are none, they can be artificially created, as explained above. One must also determine the parts, if any, to be remembered verbatim and note the words, images and ideas that can serve as clues for the memory.

b. *Impressing it on the memory.* For this, one must simply repeat what he is trying to learn until it becomes familiar. But let it be intelligent repetition, delaying on what was noted in the first phase as of special account. When repeating, avoid looking at the book except when necessary: this will show up the passages which still defy the memory and the refractory associations that call for greater attention. Repetitions can be done in the most diverse circumstances, even with pen in hand if necessary.

c. *Fixation of the material.* Over-learn the material. Do not stop as soon as you have succeeded in repeating the piece correctly just once. That would be like writing on sand; the wind would erase the writing. Memorising must be more like engraving and, for this, revision must be continued until one can say one's piece as if it were one's own.

The failure of many to memorise well is due to their neglect of one or other of these stages. Frequently, the cause is a lack of intelligent preparation, thus rendering study troublesome and barren, or else the insufficient continuance of revision, learning just enough to get by for the moment. For him who goes through all three stages, memory will always be a useful ally both in study and in life.

III. THE BODY

Man is a composite of soul and body. Thinking or learning, then, is not dependent solely on the soul and its spiritual faculties, but also on the body and the whole complex of its organic functions. Mental activity and organic functions are correlated. Mental work acts on our nerves and the nervous reaction, in its turn, affects mental work favourably or unfavourably as the case may be. Strong emotions affect the organism, and movements, for their part, also cause emotions. The development of the mind or of the will can be retarded or obstructed by a weak body or a frail nervous system. Hence, the ideal condition for intellectual work, as well as for work of any other kind, is "a healthy mind in a healthy body".

If the trial of bad health is part of God's design for some, they must not be discouraged; history provides us with many examples of saints and scholars who did admirable work in spite of a precarious state of health. Nevertheless, to expect to be energetic without making use of the necessary means, is only tempting God.

To keep the body fit for scientific work, one must observe the rules of hygiene. Moreover, the body needs discipline. Naturally, bodily health must not become anyone's principal concern, but it should be regarded

by all as a precious treasure, an important means of realising our ideals.

Here below we indicate some principles of hygiene which one must take into account, some physical habits which must be acquired for purposes of good work, and the defects which most commonly injure effective study.

1. Conditioning the body

Hygiene, proper breathing, physical exercise, care regarding food and well-regulated sleep all contribute their share to keeping the body in good working order.

Proper breathing. Mental work entails the consumption of a considerable quantity of oxygen. For this reason an abundance of pure air is a help towards clearness of mind, because it ensures the circulation of purified blood.

"Live as much as possible in the open air. It is a recognised fact that attention—the nerve of study—is in close relation with breathing, and for general health we know that plenty of oxygen is a first condition. Windows open or part-open day and night when prudence allows, frequent deep-breathing exercises...., walks before and after work or even combined with work according to the Greek tradition, all these practices are excellent".[1]

Physical exercise. Physical exercise is a great companion of mental work. Any form of exercise strengthens the body, helps the blood circulation and refreshes the brain. A walk in the fresh air, athletics, or outdoor games after intense study renew the spirit, rest the nerves and destroy the neuromuscular tension caused by study. In the absence of other forms of exercise, private physical exercises are a necessity.[1]

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[1] SERTILLANGES, *The Intellectual Life.* 35.

Food and sleep. The tired organism is revived and toned up by sufficient food and sleep. A moderate diet, good eating habits—eating slowly, regular meals etc.—help one's intellectual work. Stimulants and alcoholic drinks should be avoided: they attack one's power of concentration, even if they sometimes seem to enliven the imagination. They may even occasion serious handicaps.

Still more important is sleep. In sleep, the organism gets rid of poisonous elements which both physical and mental works leave behind them, thus producing the sensation of weariness. "Pay still more attention to your sleep", advises Sertillanges, "Take neither too much nor too little. Too much will make you heavy, stupid, will slow up the blood and the power of thinking; too little will expose you to the risk of prolonging unduly the stimulation of work and dangerously superimposing strain upon strain. Watch yourself; in this question of sleep as in that of food find out how much you need and make a firm resolution to keep to it. There is no general rule".[2]

2. Good bodily conditions during study

The body should help, not hinder, our minds while we study. For this reason, as well as for others, correct posture, sensible care of the eyes and certain physical conditions in the room are important.

Correct posture. "It is important", writes Sertillanges, "to work in a position that gives free play to the lungs and does not compress the other organs". While studying, then, the body should be held erect to facilitate the breathing and to avoid possible curvature of the spine not uncommon among intellectuals.

Ordinarily, one will be seated when studying and this seems to favour concentration. But when study is prolonged, it may perhaps be advisable to alternate between sitting and standing, because, in some, prolonged immobility of the body produces weariness and anxiety thus rendering attention difficult.

Care of the eyes. The student's eyes are surely one of his most valued gifts. So, one should avoid careless attitudes that may cause unnecessary eye strain and even incurable defects. The first requisite is sufficient light, and this should be so positioned that it causes no glare on the printed page, thus enabling one to read without straining the eyes. Reading in direct sunlight or facing windows or artificial lights must be avoided. If possible, try to arrange yourself in such a way that the light comes over your left shoulder and falls evenly on the page.

You must try not to bend your head down over the book. What you are reading should be placed in a line perpendicular to the line of vision. That makes for less atigue as there is no need of focusing the eyes at widely different angles as they move in the process of reading. When the reading is prolonged, the eyes should be rested from time to time by looking away from the book or by closing them.

Surrounding physical conditions. Psychologists tell us that the habit of working in the same place—at the same table or desk—is helpful. The habit of study asserts itself. Another positive factor is quiet. The most disturbing noises, however, are those of unknown origin and intermittent ones.

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[1] Ibid.

[2] SERTILLANGES, *loc. cit.*

On the other hand, it is well to bear in mind Bernard's wise remark concerning the relation between fruitful study and these physical conditions: "Many books and pamphlets which deal with effective study habits emphasise the need for proper lighting, proper temperature, controlled humidity, a good desk and straight chair, and quietness. There can be no doubt that these are desirable physical characteristics of the study atmosphere. They should be sought *to a degree*. But it must be stressed emphatically that good study may be accomplished when these conditions are unobtainable".[1]

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[1] BERNARD, *Psychology of Learning*, 24.

Chapter 3

DISPOSITIONS FOR EFFECTIVE STUDY

1. General Dispositions

Purity of life. Thomas Aquinas speaks of the necessity of keeping one's conscience pure, of how careful one should be regarding silence, how slow to speak. He recommends the student to be on friendly terms with his companions—neither aloof nor too familiar—and to avoid being involved in the doings and sayings of outsiders. Man's psychological and moral unity is the reason for all this. The whole man studies.

The moral virtues remove obstacles and prepare the "mental set up". Passions and vices scatter one's attention, disperse the energies and hinder good judgement. Sertillanges thus finely describes these moral enemies of knowledge: "What are the enemies of knowledge?.. What about sloth, the grave of the best gifts? What of sensuality, which makes the body weak and lethargic, befogs the imagination, dulls the intelligence, scatters the memory? Of pride which sometimes dazzles and sometimes darkens, which so drives us in the direction of our own opinion that the universal sense may escape us? Of envy which obstinately refuses to acknowledge some light other than our own? Of irritation which repels criticism and comes to grief on the rock of error?"[1]

Consequently, educational centres where there is no check on conduct cannot be places of study. The fruit derived from the discipline of sense, from simplicity, humility and purity of conscience is the possession of truth. "*Blessed are the pure of heart*" said the Lord, "*for they shall see God*".

Unity of tendencies. Unity of tendencies, whether it be in one's thought or desires, is an important factor in a life of study. It does away with parasitic ideas, makes concentration possible and brings with it the natural joy that accompanies perfect acts.

Unity of tendencies is assured by the purity of intention with which one approaches study, and is protected by one's ideal. To have as ideal something which is in agreement with one's aptitudes, which is not in conflict with one's vocation, is to bring to study the energies of all the tendencies unified by it.

Prayer. Prayer is always useful, no matter what the subject of our study may be. But when we come to study religious truth, prayer is not only useful, but necessary; it is that which puts us into direct contact with its subject matter, God.

Prayer obtains from God graces of light for the mind and strength for the will. It tranquilises, restores and elevates. For that reason, there is no better way of beginning a study session than a moment's prayer. It must not be forgotten that study is an effort to acquire truth, and truth is in God, or, better, God *is* truth.

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[1] SERTILLANGES, *The Intellectual Life*, 25.

2. Specific dispositions for study

a. *Earnestness and Interest.*

Study is hard work. It is beset by one danger: our native sloth or indolence. There is only one way to overcome this—to develop in oneself the spirit of earnestness and a love of study. The desire or, rather, a real longing to learn is the motor that sustains our activity in those periods of hardship that are inseparable from the process of intellectual formation.

Knowledge is born of desire. The desire may vary in kind, "but if knowledge is to be acquired at an optimum pace, the desire must be understood and be strong —this is called interest...Interest is that feeling or attitude which the person has toward an object, situation, thing or person which creates "oneness", or identification. It arouses and maintains activity toward a particular goal".[1] Interest provides the motive power, the driving force in study. So, to have interest is the first condition for effective study and learning.

How can we create and maintain a constant interest in the subject we are studying? Interest in a subject can come from various sources; it may spring from natural curiosity, from the subject's relation to personal needs, from the desire to excel in it, or from fear of the consequences of failing in it. In any case, the student must convince himself that he has an obligation to take interest. A teacher's enthusiasm, the clarity of his teaching or the variety of incidents he may introduce can facilitate attention and arouse sporadic interest in a subject. But the enduring interest required for continuous study is something that student alone can create. "Contrary to the expressed attitude of numerous students, it is not up to the instructor to *make* a course interesting—he can only help set up the conditions which will facilitate your taking (or creating) an interest in the work. Interest is an active process of identification on the part of the student. An outsider cannot identify for you. Interest is something you must take".[1]

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[1] BERNARD, *Psychology of Learning and Teaching*, 19.

Obviously, not every subject will be pleasant. To be interesting is not the same as being pleasant. We are interested in a great many things that are unpleasant. It is enough that they be related to our needs, desires or ideals.

The force of psychological arguments should be added too, when possible. We must try to love and make pleasant what has been imposed on us as a duty. The first step towards that is to find a purpose in the subject and relate it to one's own life. The student who is convinced that a certain subject is useless, or that some classes are of little or no use, is faced with a very tormenting and fruitless task. Reflection on the utility of any subject for the development of our personality or the fulfilment of our vocation, the reading biographies of men who have had to follow the same programme of studies and contact with people who find such subjects interesting can all be means of awakening our interest.

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[1] BERNARD, *op. cit.*, 20.

On the other hand, when it is necessary to take on an uninteresting subject, it has been found that the best way out is to attack it with even greater effort and to keep at it until one penetrates its very essence and experiences the reward of having mastered it. In ultimate analysis, it is not the subject itself that is boring or dull; there are many who find it interesting. Every fact and theory that one may have to study was once the object of someone's interest. It is therefore potentially interesting. There may be dull students, therefore, or dull teachers or writers; but, when all is said and done, there are no dull subjects.

High level of aspiration and a high ideal. To keep interest alive as a driving force, one should be always in competition with oneself, always striving for intellectual development. That is, one should have as proximate goal a definite task to master and as long-distance goal a clear ideal of intellectual formation.

The spirit of conquest is something necessary for our student. At primary and high school level *personal* and *group* competitions are used for this purpose; emulation acts as a stimulant. In higher studies, one must compete with oneself; try to beat one's own records. Besides this self-rivalry, a student must possess a *level of aspiration* equal to his intellectual task. It should not be too high, because then it offers frustration and defeat instead of a challenge. Of course, it must not be too low either. To make only a minimum use of one's faculties produces boredom and superficiality.

Another thing the student must keep his eye on is his ideal: that portrait of his future self free from all those defects or lacunae which still mar its beauty, and possessed of those qualities he ambitions. Such a vision is very powerful psychologically; it encourages and sustains, generates joy and optimism. And a certain amount of optimism, a conviction of the possibility of reaching the desired goal of full intellectual development, is necessary for the student. No one is going to sacrifice oneself in order to realise something he does not believe to be possible. Pessimism and sadness cover the faculties like a veil. Joy and optimism dispose both body and soul for the task ahead and multiply one's energies a hundredfold. With his eyes on the ideal, then, the student must cultivate the habit of joyfulness and optimism.

b. *Assiduity and perseverance.*

Whenever Pasteur met a student, he told him: "Work and persevere". Assiduity and perseverance; without these there is no progress in study.

The distinctive virtue of the student is studiousness. The opposite vice is laziness in its various forms.

Just as the indolence of a people spells failure, so also that of a student. His faculties, created for fruitful work, become atrophied. His mind becomes a marketplace—open to all who pass by. There are futile preoccupations, mediocre ideas, unhealthy emotions where there should be the preoccupation to learn and the joy that is born of the conquest of truth.

Laziness and its forms. The student must take into account the natural tendency to indolence hidden in every man. "The great enemy of knowledge", writes Sertillanges, "is our indolence; that native sloth which shrinks from effort, which does indeed consent now and then, capriciously, to make a big effort but soon relapses into careless automatism, regarding a vigorous and sustained impetus as a regular martyrdom. A martyrdom, perhaps, given our make-up; but we must either be prepared for it or relinquish the idea of study: for what can be done without virile energy? "O God, Thou sellest all good things to men at the price of effort", wrote Leonardo da Vinci in his notes. He himself remembered it.[1]

That native sloth can express itself in various forms, disguise itself in various tendencies. In the first place, we have some wholly and absolutely lazy people whose repugnance for work of any kind is evident to all. They are the type that seem incapable of any clearly defined idea and who are ever shrouded in an atmosphere of weariness and somnolence. Should a student find himself attacked by such mental and physical torpor he must spare no pains to get out of that state as quickly as possible.

But there is also a disguised laziness, all the more dangerous for being hidden. Sloth can nest, so speak, in different types of students. In the pessimist, who rather than abandon his inactivity declares beforehand that there is nothing to investigate, nothing to do; in the routine-bound type who refuses to advance his knowledge by going deeper into a subject, but is content to cling to his first opinion in the matter.

Day-dreaming is an equally disguised form of laziness. It is a floating state of mind where intellect and will are moved about aimlessly by the caprice of vague images and ideas that succeed one another without order. In some students, this tendency to day-dream survives a long time, and it is harmful. Apart from the unhealthy direction it is liable to take, it leaves the mind full of vague ideas and ideals, wastes a lot of time, and considerably weakens the will. Progress in study will be in proportion to the brilliance of the imagination, the vigour of one's thought, and a taste for precision in the use of words. Incoherent thinking, a flighty imagination and a soporific languor of the spirit must be fought as dangerous manifestations of indolence.

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[1] SERTILLANGES, *The Intellectual Life*, 92-93.

Sloth can cloak itself even in activity. Deep down, those active students who are always busy with useless little things, those who give themselves to excessive activity, "undertaking many things simultaneously or successively, but always on the well understood condition of never finishing them" because of the constancy which that would require, are really lazy. It is what Balmes calls "sloth under a hypocritical veil".[1] Very similar is the case of those who are capable of considerable effort in one sphere of activity, while in another equally important one they are indolent. I am not referring to those who are lazy where study is concerned, but outstanding when it comes to athletics—a frequent phenomenon—but to those who devote themselves passionately to the study of one subject and neglect another altogether. Like unpruned trees, they tend to grow only in one direction. So, even such "industriousness" is used as a mask by sloth.

Yet another kind of laziness takes refuge in "vain curiosity". Intellectual curiosity, the desire for knowledge, is a necessary virtue; its contrary vice is known as "incuriositas"—the absence of such a desire—and it produces mental passivity and sterility. But "vain curiosity" is opposed to studiousness in the same way as laziness is. It can take on a variety of forms but they all have one thing in common: an inordinate desire to know without order, method or measure.

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[1] BALMES, *The Art of Thinking Well*, 249.

The portrait of the young man carried away by this curiosity is a well-known one: he devours one book on physiology, another on history, yet another on philosophy or theology etc., but makes a deep study of none of them. Is this the work of a diligent student? No indeed, it is that of the slothful, even if he reads late into the night. Besides, it is harmful and fruitless work. What happens to the person who, carried away by an uncontrolled appetite, swallows every kind of food without chewing it? He ruins his stomach. Applied to our case, the result is a failure to assimilate what is read—intellectual indigestion—with the consequent loss of ability for personal and formative study.

When a student abandons obligatory study to follow the lead of his curiosity, he is not assiduous but lazy. This brings us to the consideration of that quality so necessary for any kind of study that would give lasting results: namely, perseverance or constancy.

Perseverance. Learning is a gradual process and a hard one. It takes time, hence the need of perseverance. Books with such alluring titles as "How to Learn a Language without Tears", "Philosophy Made Easy", "History in Three Months" and the like, are rapidly disappearing from the market. It is true that good textbooks with a right method can eliminate useless complications, but they cannot do away with effort. Learning anything worthwhile is difficult; for some it is painful; for everyone it is tiring.

A life of study, sometimes due to the difficulty of a subject, sometimes due to the length of time it takes to master it, has its moments of depression, of distaste. What Sertillanges says of such moments in scientific work has a relative application to study in general: "All workers bewail the moments of depression that break in on the hours of ardour and threaten to bring their results to nothing. When the disgust with work lasts long, one feels that one would rather plant cabbages than pursue a wearisome study; one envies the labourer who on his side calls you a good-for-nothing because you sit quietly in your chair".[1]

On such occasions, one needs all the energy the will can muster; the vision of the goal will give the necessary courage. The only way to overcome difficulties is to face them; to throw oneself ardently into the work. First the inertia and later the distaste will disappear in the fire of joyous and fruitful work. Much is asked of the student, but he also receives much in return; personal formation, the peace brought by a duty fulfilled, preparation for the future and the final victory.

"The true intellectual is, by definition, a man who perseveres. He takes on himself the task of learning and teaching; he loves truth with his whole being; he is consecrated to his work; he does not throw it up prematurely. Great lives have all displayed this supreme mark of superiority. They end like a glorious day. The red light of the setting sun is no less beautiful than the first golden gleams of morning and it has grandeur in addition. The man of character who has worked unfailingly throughout a long life can go down like the sun into a quiet and splendid death; his work follows him, and at the same time remains with us".[1]

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[1] Sertillanges, *The Intellectual Life*, 156.

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[1] Ibid, 161.

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Chapter 4

CONDITIONS OF EFFECTIVE STUDY

1. Concentration

One of the conditions necessary for success in work or study is concentrated attention. Even several hours' study are meaningless unless it is done with the proper application of the mind. Many students who are unsuccessful owe their failure not to any lack of brains, but to the fact that they have never trained their minds to do disciplined and concentrated work. Others, who are not geniuses, are outstanding because the habit of consistent attention teaches them how to avail of all their faculties to the best advantage.

The process of attending can be started and maintained in different ways. We may speak of *involuntary* attention, where certain kind of intense stimuli (noise, pain etc.) force themselves on our attention; we cannot but attend. We may also speak of *spontaneous* attention, which does not imply effort—one attends naturally and easily to things that answer to some personal interest. In studies, for instance, one may have moments of spontaneous attention, studying a subject that one is personally interested in, or listening to an inspiring teacher.

However, the objects of our study do not always arouse

spontaneous attention. Then, it is the turn of *free*, *willed* and *active* attention, where one decides to attend and maintains that attitude actively. It is an attitude that may entail some effort, because the process of attending is selective; a person can concentrate his attention on one object rather than another—choose what is more important in preference to that which is more pleasant.

Effects of concentration. The mental faculties work at maximum efficiency only as long as their attention is held. "Light when diffused is lessened in geometrical progression. On the contrary, if you concentrate it through a lens, what it hardly warmed when it radiated freely takes fire at the focal point where the heat is intensified."[1] The perception of stimuli and one's reaction to them are sharpened by attention; under the concentrated force of the mind, sensory stimuli grow in intensity; ideas become more and more clear; the logic of their associations comes to the surface; the basis of a judgement gradually takes shape in the mind; the foundations for memorising are strengthened.

Study that is engaged in with perfect attention has another effect, too: it becomes pleasant and is much less tiring. "When we follow the course of one idea to the exclusion of every other, when we are attentive only to what we are studying or hearing and forget everything else, even ourselves, then the intellectual return is at its maximum. Then natural pleasure is great, and there is only that minimal fatigue which we call physical. Two hours of THIS perfect attention are equalised by five minutes of rest through conscious sensations ('receiving'). A day's work is balanced by a night's sleep. Thus we can work intensely at a single idea for many years, and intense and orderly study far from weakening the brain, is a gymnastic which strengthens it."[1]

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[1] SERTILLANGES, *op. cit.*, 95.

On the other hand, when study is fraught with distractions, with parasitic ideas, it is less satisfying and more tiring."[2]

Causes of defective attention. At times one's inability to concentrate is due to bodily weakness: fatigue and boredom prevent alertness. Neuromuscular tension also interferes with concentration. Since mental activity has a corresponding reaction in nerves and muscles, any tension that brings fatigue will impede perfect attention.

The most common sources of distraction and, consequently, the most frequent causes of defective concentration are of the cognitive and affective orders: namely a lack of interest in what one has to study or listen to, and emotional disturbances. The mind and will are inclined to attend only to what is proposed to them as "good"—in relation to their needs. The case of many college students, who say they cannot concentrate on their studies, is not that they have not got the "mental power" to do it, but that, either out of indolence or for lack of a professional vocation, they have not got sufficient interest to do it. The same people are well able to concentrate on a person or object in which they are interested. Then there are those who complain that they are not able to concentrate on their studies so well as they formerly did. Here again, it is not, as one has expressed it, "because their brain has become weaker, but because their 'hearts' have become richer, admitting many other objects and persons within their field of interest."

Emotional disturbances, such as uncontrolled passions, worries, scruples, anxieties, affections, phobias etc. can make concentration impossible. When, for example, one is afraid, it is difficult to attend to anything else but the source of one's fear; the process of study will be continually disturbed by the intrusion of ideas and feelings associated with the emotion. The mere idea of trying to finish something quickly produces worry, with consequent muscular tension, thus hastening fatigue. This is frequently the case with students who, before an examination, try to cover a big amount too quickly. The physical result is tension and quickly ensuing fatigue; a result seriously detrimental to their studies since it renders attention ineffective and impairs the clarity of their ideas. In fact, their anxiety has caused them to achieve the opposite of what they were so anxious to do.

How to concentrate. In the history of the sciences, there have been persons endowed with a remarkable power of concentration. Their healthy minds and strong wills easily divided the day into so many working compartments, giving all their energies to each task. The absorption of some scholars was well nigh incredible; it gave rise to their famous "distractions", distractions that presupposed the complete concentration of all their energies on the object of their study.

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[1] IRALA, *Achieving Peace of Heart,* 32-33.

[2] IRALA, *loc, cit.*

All can, however, train themselves to concentrate, thus rendering study more effective, and all can avoid to some extent the obstacles which hinder attention.[1]

In normal cases, the first requisite for attention is to develop a deep interest in the work of the moment. Frequently, it is the will that must put things in motion and give the sign, "age quod agis"—"attend to what you are doing". A person may not always be able to do what he wants to, of course, but he must want to do whatever he does. If the attention is to be something joyous, efficacious and lasting, this *voluntary* attention (born of a deliberate act of the will) must be converted as far as possible into spontaneous attention (sustained by perceiving the work as "good"). One should make work interesting, surround it with the light of one's life and ideals. Then the process of concentration will develop spontaneously and be fruitful.

Regarding the obstacles to concentration, the remedy will vary according to the nature of each. For instance, in the case of emotional disturbances one should try to discover their roots and destroy or weaken them in such a way that they do not interfere with one's attention. The same holds true for external distractions; they are no more of a hindrance than competing thoughts and impulses. Quiet and complete seclusion—which is not always

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[1] R. De Saint-Laurent advises as follows for a methodical development of concentration: Beware of the "empty-moments"; keep a check on yourself during your work; keep up your interest in the conversation in which you take part; use the moments of leisure to the best advantage; keep your eyes open on the world at large. Cf. *Mental Concentration* (Dublin, Aubanel, 1950) 65-82; he proposes some concentration exercises in pp. 33-44.

available—is not an indispensable condition for concentrated study or work. The solitude one needs for study is mainly interior.

Experience and psychology teach us that concentration is just as easy—and for some even easier—in a library or crowded study hall as in a private room.[1] It is not the same, of course, when the hall is also being used for recreation, or when some will not co-operate during working hours. Then it takes a great effort of the will to begin and maintain one's concentration. Such circumstances, however, have the advantage of developing the ability to disregard external distractions, till one can study even in the midst of noise. If physical solitude is available, naturally one should protect it; when one wants to work and knows how to, it is better to work all alone and create for oneself some privileged hours of perfect attention.

One must also take into account the limitations of one's powers of concentration. In other words, we must be able to combine concentration with relaxation. There is a limit to the strength and duration of attention. The fact that one is able to concentrate on a subject for several hours does not mean that one has been concentrating attention on the same idea or image all the time; this is possible only for a few seconds. In protracted concentration there is rapid oscillation as one's attention switches to related images or ideas. Moreover, one does not attend fully to successive ideas without periodic moments of relaxation.[2]

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[1] Cf. SERTILLANGES, *The Intellectual Life*, 76-77.

[2] Cf. IRALA, *Achieving Peace of Heart*, 45-47.

If a person studies without anxiety, he will take these momentary relaxations unconsciously. The relaxation may be no more than looking out of the window. This is sufficient to enable the mind to continue working with full attention. And then when the time for full relaxation, for rest, comes, one should take this also with one's whole mind and will. The case of students who are unable to concentrate on their studies during study time and yet cannot stop thinking of them when they are supposed to be resting is not infrequent. The result is depression, fatigue and perhaps a nervous breakdown.[1]

2. Order and method

If study is to be productive, then it must be orderly and methodical. Order and method complement one another: method is order in action.

Order is something that embraces our whole life: it must be present in ourselves, in our lives and in our use of time. For a methodically efficient study the student needs three things especially: a well-planned time-table, a correct combination of study and rest, and a right approach to the different subjects of study.

a. *Scheduling the time*

The time-table of every educational institute includes the following items, each with its own well-defined length of time: classes, study time, free study time, time for personal duties and responsibilities, free time, recreation, rest. All these are necessary and must be well combined if they are to be effective.

It often happens, however, that the student finds himself without an official time-table for study, and must schedule his time himself. A time-table is absolutely necessary: it enables one to make the most efficient use of the time available; it frees one from both the feeling of hurry or indecision, and, at the same time, closes the door on temptations to laziness, unrestrained curiosity or improvisation.

This time-table must be realistic, well-fitted, that is, to the duties and needs of each, and to the varying degrees of ease or difficulty which each one finds in the work assigned to him. It must also be flexible, lest, in some circumstances, it should prove a hindrance rather than a help in the performance of one's duties and in the harmonious development of the personality. Once one has settled on a certain schedule, it is important that he observes it faithfully.

b. *Periods of study and rest*

One's time-table must be a perfectly balanced combination of work and relaxation, of study time and time for recreation and rest. This is necessary in order to keep oneself in good physical, mental and emotional health.

Length of study periods. Study periods during which the learning of a subject is carried on continuously, should be neither too short nor too long. The level of efficiency varies during each period. The normal study period has

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[1] Irala offers some means and exercises to correct defective concentration in *Achieving Peace of Heart*, chap. II and III; in chap. I he speaks of remedies against bodily and mental fatigue. In some cases recourse to a specialist may be necessary.

three phases: (1) A *warming-up* phase—that of adapting oneself to the task in hand until one has got into the swing of it. (2) A phase of *full output*, during which the learner works at his best. (3) A *slowing-down* phase that starts with the onset of fatigue and boredom.

The most suitable length of time to be devoted continuously to a subject will depend on the nature of the matter and the learner's power of concentration and endurance. According to that curve of efficiency and fatigue, a short period seems to be inadvisable, for it may not allow the second phase to run fully; too lengthy a period may be unprofitable, and even harmful, due to the mounting fatigue and boredom. Study only defeats its own end if continued when fatigue and boredom are caused not by a lack of interest but by a real necessity. Symptoms of fatigue are nature's warning that a change of occupation or rest is needed.

Unrestrained curiosity or the anxiety of an examination sometimes lead to abuses in this matter, for instance by prolonging study late into the night. One can deceive oneself in such cases by the illusion of a "mental second wind": the feeling of fatigue or drowsiness may be got rid of by a great effort of the will or the use of stimulants, the mind then appearing to be clear. There are emergency forces or energies in man, and when he is tired—but not exhausted—nature allows him to draw on these resources. But only at the price of efficiency; for the next day, or those following, if that effort and abuse continue, it will result in over-fatigue; ordinary daily rest is powerless to take away that fatigue and that weighs on one for days, interfering with the efficiency of his work.

The best time for study. A question closely related with what we have just been saying is that of the best time for studying and the wise distribution of one's effort in each subject. Experiments have repeatedly shown that the efficiency of mental work varies during the day. In educational institutes the time-table of studies is drawn up with this in mind, and it is well to take it into account for the regulating of one's private studies also.

The first hours of the morning and those at the beginning of the night are commonly regarded as the best for study: the former because at that time the organism is more rested and the mind clearer; the latter on account of their accompanying quiet and the fact that sleep, which helps ideas to settle, comes soon afterwards. However, to study just before bed-time would probably interfere with sleep; so some time should be allowed for the mind to relax. The last spiritual exercises of the day can be a help in this.

Rest. In the student, the ability to combine intense study properly with periods of rest is a very precious virtue. Rest does not always mean recreation, of course; still less, idleness. The kind and amount of rest to be taken will depend on the nature and the degree of the fatigue to be remedied. We may speak of *normal* fatigue and *over-fatigue*. The former is the normal result of work and the ordinary means of resting are sufficient to take it away. Over-fatigue or exhaustion arises either from pathological conditions or from abuses in working, and may require the use of extraordinary means to cure it.

Normal fatigue, which is what we are concerned with here, can be either local or general. Several times during the day we experience local fatigue; in these cases a change of occupation—from mental to manual work and vice versa—is equivalent to rest. A little moment of prayer will have the same relaxation value. But sometimes, recreation will be more advisable.

Fatigue, however, may reach such proportions and become so general that it renders further efficient work, whether mental or manual, impossible. Then we have a fatigue which is general and complete. That is usually how one feels after a full working-day. The remedy for this, provided there have been no abuses in the work, is the complete rest of a good night's sleep.

c. *Right approach to the different subjects*

Order and method in academic work require the student to study each subject according to the method demanded by its nature, and to give to each the importance it possesses in the light of the student's vocation.

Right approach. The principles and conditions that hold good for study in general are applicable to that of any subject. But besides these, each subject demands a method and an approach proper to itself. Take the study of a foreign language, for instance; the approach will vary according as one is learning to speak it or merely to read it. Likewise, such different subjects as mathematics, science, philosophy, history etc. all demand a different approach. Each one, therefore, must follow the directions and hints given either in the text-book or by the professor for each particular subject.

Proper importance and sequence of subjects. To follow one's whims and fancies in study and pass arbitrarily from one

subject, or part of it, to another, means submitting the mind to a whirlwind of ideas and impressions which are impossible to assimilate. That constancy which takes a subject step by step in the order imposed by a programme and a sequence of classes, is indispensable to effective assimilation. Such proverbs as "divide and conquer" and "hasten slowly" find an application here.

Even in the field of free study, the student must remember the purpose of his study generally as this is identified with his vocation. Otherwise, one would introduce a double ideal into his life, or at least a secondary ideal not in agreement with that of his vocation. It creates a conflict of interests, and that is harmful to study.

Besides this fundamental principle of a hierarchy among the subjects, one should also keep certain psychological principles in mind. Thus, for example, the more difficult things should be attacked first. Once these are mastered, the rest follows easily. Then one is free to indulge in questions or subjects of particular interest. This is the natural procedure in scientific work and specialisation, which we shall deal with in the second part of this book.

Conclusion: Getting the most out of a study session

In these concluding paragraphs, we offer some counsels for getting the most out of a study session. They are but the practical application of the principles we have hitherto been explaining.

1. *Prepare for study.* Before you begin a study session, you must first of all create a suitable environment for it

and prepare your mind. The presence of all those physical and psychological factors we spoke of earlier is very desirable but not always possible. There are, however, two important things which are always possible. First, a short prayer; this will give your study a purpose and bring calm and light to your mind. The second is to have all the necessary material—text-book, reference book, pen, paper, etc.—ready to hand or easily accessible; this will avoid your having to interrupt your concentration.

2. *Get straight down to work.* You must get down to your assignment immediately and vigorously. The golden rule must be: "age quod agis", which we might paraphrase here as "focus your *full* attention on the work to be done". In case concentration is difficult, concentrate for just a few moments first on one paragraph and then on another, or take up your pen and summarise the first paragraph, thus easing yourself into the swing of the task.

3. *Be active.* Study means learning and not just covering pages of an assignment. You must aim at understanding the matter and look for the associations and implications of the truth you find there. Study, in other words, must be a period of full mental activity.

4. Be *methodical in your activity.* When approaching, understanding and mastering a subject, do so methodically, step by step. First, get an *overall view* of the matter, by reading the introductory or summary matter or by making a note of its main divisions and headings. Then *read* with an inquisitive mind, trying to find the answers to such questions as: what are the main ideas? Which can be regarded as supporting material? Which elements are primary, which secondary, and how are they interrelated? Next try to *recall*, to test your memory, and understanding, by trying to answer the same questions without the book. Now *reflect* on what you have learnt, relating it to ideas and facts already known to you, and trying to see what new avenues of thought they open up. That will make the new material really your own and also provide a little initiation into creative thinking. Finally *revise* the material periodically in order to master it fully.

In the whole of this process the golden rule is: activity in your study, method in your activity and perseverance in your method.

5. *Study calmly.* To study actively does not mean studying in feverish haste. You must try to assimilate the matter well without wasting time, but also without being anxious to finish as soon as possible. Tension, nervousness and worry must give way to Dupuytren's maxim: "Above all, let us not hurry, because we have no time to lose".

6. *Protect your solitude.* If you have a room at your disposal and a set time for study, that time must be considered as sacred. Nobody must be permitted to steal it. Neither the indiscretion of friends nor a misconceived charity must be allowed to interrupt the work; charity, both towards ourselves and our neighbour, requires that we form ourselves properly. There are other times for communicating with our fellowmen.

If you must work in a study-hall or library, you must impose on yourself a rigid discipline which will ensure a solitude equal to that of a private room. You must make it a rule to resist curiosity concerning what is going on around you, no matter what happens. Besides, you must accustom your neighbours to respect this discipline and yourself to respect that of others. You cannot show your charity better than by helping other people's concentration with your own, and, conversely, you can do no greater harm than to break up the rhythm of other people's attention by your own distractedness.

Chapter 5

CLASS

1. The usefulness of class

With the invention of the printing press and the multiplication of books, some thought the role of the class and of the teacher, surrounded by pupils for whom his words were the only source of information, would grow less. A learned man could put all his knowledge into a book and the book could replace the teacher. That is the idea behind Carlyle's remark that the modern university is a library.

In actual fact, the book has not ousted the teacher, nor has the library replaced class-halls and laboratories. Class helps a student in many ways. It helps the will by making such qualities as constancy and assiduity easy to practise and accustoming it to the progressive method—effects which it produces irrespective of whether the subject is interesting or not. Class also furthers one's understanding of a subject. In books, the facts and doctrine are dead and inert matter. On the lips of the teacher, they come to life. Some points are emphasised and others passed over in order to achieve a harmonious effect. Obscure and difficult passages are approached from different angles and explained. Retention is facilitated, too, because the more the senses that collaborate in the learning of something, the easier it is to remember it. In class, the voice and gestures of the teacher play their part together with our own sight and hearing and sometimes our voice.

Moreover, the teacher's experience and his grasp of the subject as a whole are a great help in seeing and solving difficulties; they also help us to acquire the ability to comprehend, make us prudent, and teach us to apply our knowledge to real life. The younger the pupils, of course, the greater the utility of class. The teacher acts as a bridge between youth and maturity, between class work and the world.

A consideration of the lot of the self-taught student, who ignores oral teaching altogether, serves to emphasise the usefulness of class still further. Besides lacking the helps which class has to offer, the self-taught person is exposed to several dangers. The first is the temptation to study only those subjects or questions which appeal to him, leaving aside anything that causes difficulty or is unattractive. Hence the lacunae in his formation. Secondly this way of learning is slow, and leaves one open to incorrect interpretations and downright errors. Finally, since the self-taught man has been accustomed to judge everything for himself, without the counter-balance of other minds, he is in danger of becoming too dogmatic in his assertions and incapable of appreciating the viewpoints of others. Self-teaching can make a man erudite, but it is very unlikely to give him a balanced, all-round formation.

2. The limitations and dangers of class

All this does not mean that we are to expect all our instruction from our professors. Class without private study

is obviously not enough. Even if the ideal of two hours' study for every hour's class is not always possible, one must be convinced of the necessity of a certain amount of study to complement class work. Nor is it necessary that the whole of the subject matter be explained in class. Some students seem to prefer to be told things, to have everything presented to them by word of mouth. They may feel resentment if the professor does not cover the whole textbook by means of a detailed explanation. This is to misunderstand the relation between teacher and textbook, between class and study.

Many things in a subject or textbook are easily assimilated without the immediate help of a professor. To explain minutely what is not necessary is to subject the class and the learning process to a dangerously slow pace. The student must benefit from both teacher and textbook, from study as well as from class. Each has to supplement the other.

Coming now to the dangers or drawbacks of class, we would indicate the following:

Becoming accustomed to passivity. The most immediate danger arising from class is the passivity of the pupil, because it threatens to render class completely fruitless. The pupil listens to the professor's explanations, and with docility accepts all his arguments and his solutions of the difficulties without ever thinking out or investigating anything for himself. His work is reduced to memorising what the professor and the textbook have given him.

Such passivity jeopardises one's whole formation. It makes assimilation difficult and leaves undeveloped one's ability to reflect, to think for oneself and to apply one's knowledge to the circumstances of everyday life. Work thus becomes something mechanical and cannot be pleasant.

Inadequate presentation of the matter. A problem that arises in large classes is that of the individual differences between the alumni: differences in previous formation, in intellectual capacity, in reading ability and fluency in the language. An explanation which some would regard as above them, will be regarded by others as normal or even elementary. What impresses some will leave others unmoved. So that, no matter how great his ability, a professor can never hope to present his subject in a way that will be always suited to each and every pupil.

When students are divided into groups according to their interest or ability, then of course the range of differences is reduced and the quotient of inadaptation becomes less. Nevertheless, some degree of difference will still remain, and, so, now and then each student will find something which is not fully adapted to his present capacity and interest. This calls for a special effort on the student's part to overcome the inconvenience.

Boredom. Class, like any other activity involving mutual interaction, risks a certain amount of boredom. The danger increases when the teacher is the same for several subjects, or when a teacher has taught the same subject for years. Both the professor and the students must be aware of this difficulty, and overcome it by their combined efforts.

3. Conditions for an effective class

The effectiveness of a class depends as much on the professor as on the pupils. The professor must feel the responsibility of discharging his duties to the best of his ability. But even when the professor does his best, and makes use of the best methods,[1] class will still not be effective without the co-operation of the pupil.

The effectiveness of a class requires the pupil's co-operation not only during class, but also before and after it. This co-operation might be summed up in three counsels: (*a*) Prepare the class; (*b*) Be active during class; (*c*) Complement the class.

a. *Preparation of class*

I am not speaking here of the *remote* preparation, which includes the proper dispositions for any study—earnestness, diligence and the desire to learn. This is all taken for granted. Here, I am concerned only with the *proximate* preparation.

The proximate preparation consists in preparing the matter about to be treated of in class in such a way as to have a general idea of it. Certain questions will arise from this preliminary reading and one must go to class in quest of the answers. Certain opinions will have been formed, and await class for confirmation or rejection. To go to class without this preparation is to run the risk of not being able to understand the professor or the text, and of not being able to take notes intelligently, because one does not know whether the teaching imparted is contained in the textbook or not. The chances are that an unprepared student will not see the difficulties, and should he have some difficulty, he will be afraid to voice it lest it be already answered in the textbook.

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[1] GILBERT HIGHET studies the different methods of teaching-lecturing, tutorial system, class room work from the teachers' point of view in *The Art of Teaching* (London, Methuen & Co., 1951) 88-134. His remark in pag. 88 on the limitations of each method are very prudent. The programme of studies should comprise intellectual activities that employ all the methods: studies, seminars, lectures.

Proximate preparation usually consists in consulting books—chiefly textbook, if there is one. We shall say something, therefore, of the necessity of familiarising oneself with the textbook and of revising tracts which have been studied already.

i) *Getting familiar with the textbook.* Generally speaking, a textbook contains only a summary of the science and its chief principles. It is usually written with class and examinations in view. Its virtues and vices derive from this. It is nearly always precise and reliable, but may also be dull.

Its conciseness and precision make it an excellent means of initiation into any science. As Balmes says, "There is in every science and profession an aggregate of primordial notions, names and expressions which can only be learned by studying an elementary work... Elementary works, we may be told, are but a skeleton; that is true; but yet they save time and labour: having the skeleton ready formed for you, it will be easy to correct its defects, to cover it with nerves, and muscles, and flesh, and to give it colour, motion and life".[1]

ii) *How to use the textbook.* The textbook's role during the school year is to secure a careful preparation for the class, to make class easier and to make a steady revision possible. What better way is there of preparing a class than to take a brief, but careful, glance at the textbook. The theme of the next class is there and one can note down the doubts and difficulties which he expects class to clarify and solve. In class, the textbook helps both the teacher and the pupil; it supplies the outlines and fills in some necessary details; it saves time and energy by sparing the teacher the trouble of dictating and the students that of copying down the facts, figures and arguments that are common property and require no special ability either to discover or to understand them. Finally, it greatly facilitates revision.

The student should carefully read the textbook from beginning to end. In fact, he should begin with the preface and introduction, where the nature of the textbook will be indicated, to see, whether, for instance, it has been written from the standpoint of the logical order of the science, or has taken into account the nature of the student, thus approaching the self-teacher type of book. The student should go through the bibliography too: this broadens his horizons and shows him the books that supplement the limited scope of the textbook. Even the index should be read, because, if it is a good one, it will show the connection between the various parts and questions, and will provide a skeleton of the science in question. All this prepares one to study the book itself fruitfully.

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[1] BALMES, *The Art of Thinking Well*, 160-162.

iii) *The life-long love of one's textbook.* The textbook's function does not come to an end together with the examination, even if one has mastered its contents and even when it deals with one of those sciences which advances so swiftly that textbooks rapidly go out of date.

The textbook used during his official course of studies will always have a special value for the person who studied it thoroughly. Hence, the advisability of keeping it not only when one passes on to a higher grade, but for one's whole life. John Adams, who regards as "detestable" the habit some students have "of selling all their old textbooks as soon as they have served their turn", has these remarks to make about a person's relation to his textbook: "We have a greater familiarity with that textbook than with any other on the subject. We know our way about in it. We are able, with the minimum expenditure of time, to get out of it any information we want. There is the further advantage in retaining our old textbooks, that they supply in the most effective way a record of our intellectual experience. No one who has not tried it can realise the efficiency of an old textbook in reviving in the mind the intellectual experiences which marked the original study of the subject".[1]

iv) *The revision of subjects already studied.* The brief reading of the textbook before class will sometimes reveal the need of a glance at former tracts.

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[1] Adams, *The Student's Guide*, 160-161.

b. *Activity in class*

If our assistance at class is to be fruitful, it must be assiduous, attentive and active. We have already dealt with assiduity and attention when enumerating the dispositions necessary for any kind of intellectual work, be it class or study. Here we limit ourselves to giving some counsels for the practice of activity through (i) intelligent listening, (ii) intelligent questioning, and (iii) the intelligent taking of notes.

i) *Intelligent listening.* Among those assisting at a lecture or a class, we may distinguish those who are too distracted to hear anything at all, those who merely hear without giving their mind to the subject, and those who really listen, their minds receiving and acting upon what is being said. To hear, one has to do little more than exercise the sense of hearing; one can be intellectually passive and still hear. For listening, the will and the mind must take part. The will: usually we listen only when we want to; the will can turn listening on and off like a radio. The mind: as long as there is listening, the mind is active. There is action and reaction between the listener and the speaker. The mind receives, selects, approves, rejects, agrees with the other or not.

A good conversationalist is recognised not only by his speech but also by his ability to listen. A good actor is easily detected by the way he listens or seems to listen. The good student is easily identified by the way he really listens. A far-away look in the eyes of a student, or a posture that is indicative of passivity, is a sufficient indication of ineffective presence.

The listening, however, must be intelligent. In every class and lecture, some of the things said are important, others less so; some things are essential, others are introduced by way of illustration, and yet others are said for the sole purpose of allowing the listener's attention to relax. The unintelligent listener is the one who does not distinguish these things, which results in giving him an unbalanced impression. Again he may allow himself to wander now and then in the train of some association stirred up by what he hears. The intelligent and careful listener pays attention to the doctrine as a whole, to the ideas that are connected with the main point, and distinguishes between the important and the subordinate. His mind is not merely being acted upon by the stimuli supplied by the speaker or teacher; he is active and works on these ideas, drawing his own conclusions. This brings us to the next form of activity.

ii) *Intelligent questioning.* The intelligent listener is asking himself questions all the time. As a student he must show docility regarding the doctrine proposed by the professor. But this does not mean passivity or blind acceptance. Knowledge, we have said, is not merely belief. St Thomas warned Brother John against the notion that "Magister dixit" is sufficient to settle every question—"Do not heed by whom a thing is said, but rather what is said you should commit to your memory". One must acquire personal ideas; one's own ideas are acquired after a struggle with oneself and sometimes with the professor.

Class, unlike preaching which has been defined as "animated dialogue with one part left out", admits of real dialogue between the professor and the student. Nor is it necessary that the professor begin this dialogue by questioning the student to test his knowledge or explain difficulties. The pupil can begin. There must be open give and take; action and reaction. The professor is trying to communicate his convictions to the student and the latter has the right, the obligation even, to know the reasons why he should accept them. For this, he must overcome a false modesty—which is sometimes only a lack of humility, the fear that his question might sound silly—and ask whenever necessary.

Nevertheless, there are a few principles which the student should keep in mind as regards questioning. The question, with subsequent argument if necessary, must be put only out of a love of truth and the desire to understand something which has remained obscure. It must be accompanied by respect and modesty. The student must not insist stubbornly when the professor decides he has answered sufficiently, or postpones the solution till the next class. At times one can see the clue to a solution only after long reflection, so when a student does not see the light after a moderate insistence, he should desist, and, having thought it over again, approach the professor privately outside of class.

iii) *Taking notes intelligently.* The student must not be satisfied with listening and asking questions. He should write something, too. To have one's pen in hand is a help towards intelligent listening.

1.—*What should be noted down.* This is the first problem. At a class or a lecture, a student's first aim should be to follow it, so as to grasp its meaning; the second is to note the general outlines or whatever appeals to him as worthy of special notice. In both cases there is a problem which does not exist when making notes from a book: one must listen, understand, select and write at the same time. In class, however, one may have the advantage of a textbook, which contains much of what the teacher says.

One should not take down everything the teacher says. Some, perhaps, may think the ideal is to copy the whole lecture word for word by shorthand, or as much as one can manage to get down in long-hand. But it is neither necessary nor even desirable to take down everything verbatim. The person who takes down all the words, does not usually attend to their full meaning or to the sequence of thought in the lecture. Besides, no class or lecture is worth repeating word for word. The long-hand attempts, besides subjecting the student to a great strain, are closely akin to dictation which has been proved uneducational.[1]

A general principle might be formulated as follows: We should not copy everything the professor says, but only what strikes us as being important from the point of view of the matter or of the form.[2]

As regards the matter. The enunciation of a thesis should be noted if the professor makes any change in it. The same holds good for the qualification of the thesis. With regard to the "adversaries", it would be useful to note the historical development of their thought and any new facts. In the proofs, one should watch to see if the professor adds any new argument and take a note of the points he stresses as being the centre and force of an argument. The same holds good for the solution of difficulties.

Should the professor add some corollaries, make practical applications, or point out the analogy and differences between certain ideas, proofs, solutions or parts of a tract, these should also be noted down. Outlines and summaries are also worth noting.

One should be careful to note bibliographical data offered by the professor and the books and articles he quotes. This is very useful both for present study and for later life. The professor's opinion of such works should be noted, too: which are the better, which are more scientific, which are practical etc.

As regards the form. Sometimes, a thing will be worth noting not so much for what was said as for the way it was put: clearer, more adapted to one's mentality etc. If the professor says what is in the book in a different way, it will sometimes be useful to take a note of it.

2.—*How to take notes.* This depends much on the individual. The fundamental principle is that they be clear and in order, whatever the form or method used in taking them. Otherwise, they will be always difficult, and sometimes impossible, to use. Some take their notes on loose leaves or copy books, writing in all the items one after another with no allowance for possible additions and development. Others take big loose leaves and fold them lengthways. Then, while the professor explains, they note the principal items briefly and clearly on one half, ordering them according to the marginal numbers of the textbook or the order of the concepts: notions, statement of the question, opinions, etc.. They leave the other half blank for personal notes, summaries and reflections.

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[1] A compromise is sometime adopted by professors who insist on students listening carefully without taking notes, but pausing now and then to dictate a short paragraph containing the substance of what has been said.

[2] GONZALEZ MORAL, *Metodologia*, 69-71.

c. *Complementary study after class.*

Class must be completed by private study, if its fruits are to be really lasting. The contents of the textbook must be rethought and completed in the light of what was said in class. The student should also look through his notes, solve difficulties, fix the ideas in his head and make some notes of his own on the subject.

To rethink the text. This seems obvious; it is when he has heard it explained by the professor that the student is in the best position to read the text. Now is the time to consider the different aspects of the subject, grasp the intimate cohesion of its concepts, examine the force of the arguments, and relate this new knowledge to what he has already learnt.

To complement the text. This is also the time to read some books on the same subject in order to complement the textbook, by clearing up what it has left obscure and supplying its omissions. The professor's suggestions as to what would be of interest or useful to read can be one's guide here. It is also an occasion for getting to know the great masters quoted in the textbook.

On this point, however, abuses and superficial curiosity must be avoided; the author and the professor's explanation first, and then the rest. Otherwise the result will be confusion and superficiality.

To solve the difficulties. The student cannot claim to understand a doctrine fully unless he has solved the difficulties touching on it. To doubt, and to see difficulties is the way to knowledge. But, of course the doubts and difficulties must not become an end in themselves. They must be solved. The solution must be sought in the textbook itself or in more specialised books on the subject. If he cannot find the solution himself, he should take a note of the difficulty and ask his companions or the professor either privately or in the following class.

When there is question of differing opinions, it is useful to read an author who holds a different view from our own. That gives depth to our understanding even of our own opinion and increases our spirit of comprehension and our mental agility.

To look through one's notes. It would be well to make a habit of doing this at one's earliest convenience. Since notes are usually not self-interpretative, if they are left over for a few days, they lose the suggestive value they had when first written and so become meaningless. It is necessary, therefore, to elaborate them and supply the missing links here and there so as to make them meaningful for the future.

The time spent on this "writing up" of one's notes is not wasted. Besides being a help for the future, this work revives the impressions received in class, serves as recapitulation and helps to fix the ideas in one's mind.

To fix our ideas. The permanent fixation of ideas mus not be limited to the next study session after a class, and still less ought it to be left till the examinations are in sight. It is something that can be achieved only by constant *recapitulation* and well-planned *revision.*

To recapitulate is to go over the significant elements now and again with a view to facilitating a clear and deep understanding of the lesson or of the matter. Its purpose is rather to understand than to memorise, though in so far as it helps one to understand, it also aids recall. Revision, on the other hand, aims at memorising the selected material, once it has been well understood. Intelligent recapitulation is better than mechanical revision.[1] Revision is necessary, of course, when there are examinations. It is bad practice to leave all recapitulation till the end of the treatise; it is still worse to leave it till the end of the year. Recapitulation is something that must be going continually. Only then can one be sure of long-term retention.

Obviously, the recapitulation and revision done in class should be taken seriously, too. "Repetitions", and "discussions" are exercises designed to clarify and fix the ideas received in class.

To make notes of one's own on the various subjects. This is a very efficient method of assimilating the matter and making progress in study.

The usefulness, or necessity almost, of making private notes on a subject is based on the fact that a science, in order to be assimilated, must be adapted as far as possible to each one's make up; neither the professor nor the textbook can do this perfectly. We have already explained why the professor cannot do so, when speaking of inadaptation as one of the drawbacks of class. It is a drawback which both sides must try to overcome, of course, and the student has an excellent means of doing so in this ordering and explanation of the subject in his own way. The textbook cannot present the subject in a way perfectly suited to each and everyone either. This is one of the reasons why no wholly ideal textbook exists, and why no professor, or even student, is completely satisfied with any textbook other than the one he would write himself. It is not that another's textbook is bad, or that all other textbooks are rejected a priori, but just that everybody has his own way of conceiving ordering, classifying, and expressing things.

Consequently, every student should try to remake, order and express the textbook to his own liking. In itself, the result may be worse than the author's, but it will be more suited to the student. Moreover this written work accustoms the student to summarising and extracting, it teaches him to think things out for himself. It obliges him to be precise in his ideas and helps him to fix them. "Writing down is equivalent to reading thrice". All this, however, is true only of notes made by oneself; copying those of another has none of these beneficial results.

Notes must be *exact, brief, clear and orderly:*

Exact: Otherwise they are a source of error. Therefore, they must be made only after one has reflected on and understood the matter, and solved the difficulties.

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[1] A. Pinsent, *The principles of Teaching Method*, 279.

Brief: That is to say, they should contain everything that pertains to the substance of the matter, but should leave out all superfluous words. If something essential is missing, they will be defective, not brief.

Clear: Both in expression and in external form, so that they will be easy to revise. It might be well to leave a sufficient margin for additions and corrections suggested by subsequent readings and revisions.

Orderly: The skeleton, the cohesion of the matter must be apparent and well-defined. Logical divisions within the text and brief marginal indications can be useful.

To do some personal work: A very useful thing to do in one's spare time or during a holiday period is to put some theme into suitable language for the apostolate. Textbooks are geared to help the student assimilate the doctrine, but they do not always present it in a manner suitable for assimilation by others. So, this type of personal work is very useful. A point can be elaborated in different ways according to the public one has in mind: educated people and university graduates who are not familiar with the terminology of scientific theology, or the so-called man in the street. Sometimes, one could even try the opposite process and put a sermon or popular book into scholastic form, analysing its arguments and the precision of its ideas. All this is personal work and as such, very useful for the perfect assimilation of what we study.

Chapter 6

CLASSMATES, PROFESSORS AND EXAMINATIONS

1. Relations with one's classmates

In intellectual work, the presence of numerous classmates can be a help. But the first condition for this is that they cultivate a healthy union among themselves. They spend the years of their youth together, they pursue the same calling, they have the same ideals, they share the same bad moments and the same victories. Is this not a sufficient basis for the formation of an intimate union? Such a union must be fostered as it is a great advantage in schooldays and, indeed, during one's whole life.

This union must mean mutual help at study. This will be effected primarily by mutual example of enthusiasm and intense dedication to study, until a stimulating atmosphere is formed. Besides, there should be co-operation in those exercises which permit a division of labour.

Co-operative work in study finds a place here, too. One of the ways of revising a subject is to go over it with a classmate, with mutual questions and answers, mutual criticism and the solution of each other's difficulties. Some students find these things easier to do with a companion than alone. Some precautions, however, should be taken to make this co-operative work (sometimes called 'combined study')effective and useful. First, it should not be the only method of study. Personal, private study and revision—re-reading, re-thinking and writing down, etc.—are essential; this is more effective in the case of adults and one must be careful to acquire the habit of personal reflection even without the help of an external conscience. Secondly, combined study must avoid superficiality in revision; otherwise, it would be a case of the blind leading the blind, and both would do a bad examination. Lastly, the combined activity of all concerned must be well co-ordinated. One must take care that co-operative study does not turn into a kind of class where one of the partners is tutor and the other his pupil. Although this might seem advantageous to both—the pupil would learn by listening and the tutor by teaching—the danger, nevertheless, exists either of superficiality due to the pupil's inferiority, with a consequent lack of stimulus for the other, or of slowness owing to the pupil's being a drag on his companion. Intelligent students of more or less equal capacity are the most likely to profit by this method.

2. Relations with one's professors

The union and co-operation between classmates of which we have been speaking must evidently be extended to the professors, too. Teachers and pupils are united by the same ideals: they both have the same outlook.

On the student's side, this relationship must be based on confidence, gratitude and that contact which seeks co-operation. That special characteristic of the professor's having the same ideals in life is already a sound basis for confidence. To this must be added his present dedication to the students' formation and his personal qualities.

"Scientific" contact with the professors is very useful. It must not be forgotten that the success of the teaching-learning process lies in co-operation and mutual understanding. 'Togetherness' is of its very essence. Contact with the professor also produces a more lively interest in the subject, a greater devotion to one's specialisation.

This contact is especially helpful in the first stages of a new subject—philosophy, for example—when new methods of study render the matter more difficult. The professor can give help, advice and encouragement. This is truer still when it is a case of taking up a specialisation or undertaking some personal work: his general knowledge of the subject and his years of experience put the professor in a position to judge the opportuneness of the study, and to calculate the student's ability for the undertaking; he can counsel him in the selection of his bibliography, both from the scientific point of view, by indicating the most important works on that subject, and from the moral angle by warning him of books that would constitute a danger to his ideals or his moral formation. Co-operation between professor and pupil has always been the guiding light in the lives of dedicated scholars and has given results which have contributed greatly to the advance of knowledge.

3. Examinations

The various stages of one's career as a student are marked off by the familiar experience of tests and examinations. Examinations play an important part in a student's life and, if taken the right way, they can be very beneficial to his formation. We must not make the mistake of looking on exams as something essentially bad. Normally, of course, they are looked upon merely as tests—something to test whether the student knows certain things or not. Like any other test, an exam is a stern challenge to the student. But besides this, an exam has an appreciable educational value—that of any conscientious repetition or revision.

We have already said that the most effective way of retaining things is continuous repetition and revision. Any repetition is a kind of exam conducted by ourselves. A real examination has the advantage of obliging us to make a conscientious revision, because we must prepare even questions that we would never ask ourselves. Revision that is done as a preparation for an exam makes us cover more ground and do it more thoroughly. It is then that we begin to see the connection between certain facts or ideas. That is why, after a careful preparation, a student sometimes feels that it is only now that he has really begun to know the subject.

Whoever adopts the rather elegant attitude that he is studying for life and not for exams, shows complete ignorance of the educational value of an examination that is well prepared and well done. In all probability, he will not be prepared for either of the two. Of course, the opposite error of overrating examinations and making them the end of one's study must also be carefully avoided. When the final exam dominates the whole year's class work, when one's study becomes a technique for passing an exam, something is radically wrong. It is putting the cart before the horse.

The fact that nowadays many schools are dominated by the exam system, moulding their syllabus and modifying their teaching methods to meet examination requirements, without considering educational and psychological principles, is one of the greatest defects of the modern educational system. The practical effect of exams is certainly great when it is a question of competitive examinations and when a career depends on them. But in any case, studying for life and studying for exams must be combined. The examination is a *means* of studying, and must never be allowed to become the object of it.

Preparing for the examination. Experience teaches us that the best way to prepare for an exam is to study our assignment day by day and week by week for the purpose of learning it thoroughly. To be constant in reflective study and to fix things firmly in the mind by continual revision, is the most efficacious means not only of acquiring a knowledge which will remain part of one's wisdom after the exam, but of achieving success in the exam itself. To resort to hasty cramming just before a test is detrimental to the acquisition of a lasting knowledge, and, besides, it can open the way to nervousness, which does not help at examination time.

Besides this preparation, which is only the normal course of study well done, it is undoubtedly necessary to have a proximate preparation—study aimed exclusively at a successful examination. The educational and psychological value of such success is considerable. Above all, one should have a well ordered plan in the final reviewing of the matter for examination. Reviewing, however, is not just a matter of glancing through the pages: one must read the matter attentively, see the relationships of facts and ideas, seek new angles on the same subject, help oneself with outlines and brief sketches which will make what is essential stand out above what is secondary.

One must make sure he understands and is able to define important terms and notions, that he is able to develop the themes, that he has a complete overall picture of the subject and knows where its various parts fit into it. In that way, he will be prepared for any kind of an exam, be it factual—to recall certain facts or ideas—or demanding the application of what he knows; be it objective—requiring accuracy in giving specific data—or an essay-type exam, which would require that he knows the meaning of certain facts or ideas in the broader framework of the course.

Taking examinations. The first rule is: come to the examination with a well-rested body and brain. If your lack of discretion in studying during the days immediately preceding the exam has brought about a state of over-fatigue, you are likely to be lacking in the necessary agility and clearness of mind when the time comes for the exam. It is folly to cram in a few more facts at the last moment at the expense of general vigour in all the answers. If such hasty cramming should, by chance, prove helpful in answering this or that question, it produces at the same time muddle-headedness, lassitude and weariness which will certainly affect one's answering as a whole. At that particular time, then, one should put into practice the rules we have already given concerning the combination of rest and study and, if possible, follow the advice of

the masters and "get a good night's sleep before the day of the examination".

In an *oral* examination, one should take care to understand well the specific point asked by the examiner. The exposition and answers must likewise be precise and to the point. Generalities and vague observations make a poor impression. You should keep a 'schema' of your exposition continually before you and follow it as faithfully as the examiner's interruptions will allow. Lifeless slowness must be avoided, but also precipitation which only causes confusion.

In a *written* examination, a candidate should make sure beforehand that he has brought everything necessary according to the rules of the examination. Doing a good paper will imply three steps: thinking, planning and writing. Before writing anything, it is good to skim through the whole paper to determine its scope. Directions should be read with great care, paying special attention to such words as "define", "illustrate", "explain", "evaluate", "only", "entirely", "generally" and the like, which indicate the specific type of answer expected.

Frequently, the first reading of an examination paper produces a paralysing effect: either at not finding one's favourite questions there, or simply because the particular association of ideas necessary for the answering of each question have not yet been aroused, and so the paper looks more difficult than it really is. If one keeps calm, that feeling will soon vanish. A useful aid in such a case, if it is permitted, is to start with the easier questions. This will lessen the tension and help to set in motion the associations necessary for the answering of the more difficult ones.

In the more complex questions, and in answers of the essay-type, it is good to summarise mentally, or on paper if it is allowed, a list of the elements and points to be developed. Answering questions that were not asked or using vague generalisations make a bad impression on the examiner.

One must space out the time at one's disposal carefully between the different questions. It is good even to jot down the approximate amount of time one can afford for each. What determines the amount of time to be spent on each is its importance in the examiner's eyes, that is, its importance for the examination.

The actual writing of the examination must be concise, with use of sentences that make sense. Finally, "write as neatly and as legibly as possible. Teachers have a tendency to overmark neat papers and to under-mark papers that are messy or difficult to read. Before handing in your paper, re-check the entire paper; make sure that you have done all that was required and in the way specified".[1]

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[1] CENTI, *How to study more effectively*, 27.

Chapter 7

OTHER MEANS OF INSTRUCTIONS

CLASSES AND STUDY are not the only sources of knowledge. Daily contact with our fellow-men, the study of nature, assistance at lectures and the use of libraries and archives have all got a very formative value, too. Here are some directives which will help to use them profitably.

1. Continuity of intellectual work

Sertillanges, when considering the nature of intellectual work, rightly and insistently underlines uninterrupted continuity as the special characteristic of the thinker's profession.[1] Night and day, the thinker has occasion to learn.

This must be our principle with regard to study: study always, and not only during the periods expressly allotted to it during the day. The reason for this is that truth is everywhere and so must be sought everywhere: any minute is liable to bring us something that will enrich our mind and our experience. Ideas, like experience, emerge from nature, chance occurrences, strolls, conversations, theatres and ordinary reading. On the other hand, our faculties are always ready to elaborate, ready for mental action and reaction. All they are waiting for is our attention and eagerness for knowledge to set them in motion, and that in the requisite direction.

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[1] *The Intellectual Life*, 57-65.

Desire for knowledge, then, must keep our mind active and attentive. It would be regrettable, indeed, if we were to spend most of our day—and of our life—unthinking and distracted. In the intellectual field, we are always children surrounded by the unknown, and, like them, we must always have the question "Why?" on the tip of our tongue and be ready to answer it with reflecting attention.

Observing. For this, we must learn to look at things, to listen, to observe. An apple falling from a tree has no message for the uninterested and the unthinking, but to Newton it revealed the law of gravity. "There is no reading, no conversation, no view, be it ever so insignificant, which may not be of some use to us. With our attention we note its gems and gather them; through our distraction we may allow the gold and pearls to slip through our fingers as worthless."[1]

Personal contacts. One must particularly try to make the most of those occasions in his life when he meets a man who thinks, a learned man, or one who really lives his life. Appearances are sometimes deceptive; some men's genius is hidden behind their reserve, other geniuses seem absent-minded. It would be a pity, if we were to recognise good men only after their death. One must recognise their worth and know how to benefit from personal contact with them; they are better than a book; they can stimulate us and might possibly change the whole course of our life. "Great captains, explorers, artists, became what they were for having met an outstanding personality and

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[1] BALMES, *The Art of Thinking Well*, 9.

heard the ring of a soul. The echoes of that silent call went on reverberating in them to the end of their days, a persistent voice driving them onwards; they were borne on an invisible wave. The word of a great man is sometimes, like that of God, creative".[1]

2. Evaluating things in daily life

An observant and active-minded man will find occasion for enlightenment, information, entertainment or assistance in whatever he sees, hears or reads in his daily life; but only on condition that he possesses the necessary discernment to evaluate them properly. Just as a good buyer evaluates the goods he buys for his daily needs, a thoughtful man will also evaluate all he comes into contact with from day to day. Thus each day he carefully assesses the value of all his sources of information, entertainment and assistance. Here below are some examples which will indicate the most suitable fields for practising the right evaluation of things.

A Newspaper. When choosing a newspaper, you can evaluate it by analysing its component parts. About the *news*, for instance, you can ask whether its coverage is accurate, fair and full; concerning the *editorial:* whether it is solid, just, prejudiced or partisan. In the case of *entertainment features*, see if they are in good taste and have some educational value. In the columns intended for *practical assistance* by means of advertisements and business news, ask yourself if the help offered is reliable and honest, or, perhaps, influenced by external pressure.

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[1] SERTILLANGES, *op. cit.*, 61-62.

A Film. When judging a film, the first step is to classify it. There are many different categories to which it may belong: it may be historical, based on a novel or a play, social, educational, documentary etc. To evaluate it from the technical point of view, you must consider the photography, the background music, the acting, the dialogue (and songs if any), and the quality and handling of the plot. Then see how it is from a cultural and moral standpoint: how it can influence the minds of the people, whether it contains new ideas, propagates a new way of life etc.

A Radio Programme. There are different kinds of radio programmes: some are meant for different kinds of people, such as Children's Hour, Worker's Playtime, etc., others are meant to provide listeners with various kinds of benefits, like news, information, entertainment, foreign language or art lessons, and so on. But whatever the programme may be, one can always evaluate its taste and the influence it exercises on the people for good or evil.

A Lecture. What we have said earlier about the way to write and deliver a speech suggests the lines along which a lecture or speech can be evaluated. As regards its character: whether it is inspirational or didactical; regarding the planning of it: whether the scope of the speech is well formulated and suitable for the particular audience and occasion; whether it is well planned in the combination of main ideas, supporting materials, and clear and progressive connections; in the matter of delivery: whether it is spontaneous, sincere, attention-winning and free of mannerisms and artificial ways.

A Magazine. A magazine must first of all be judged from the point of view of *standard, purpose* and the *readers* it has in view. It is these three things that will determine the various sections that go to make it up; the doctrine and information with which it provides its readers, and the style in which it conveys them; the arrangement and typographical presentation of the contents.

A Work of Fiction. What of the story it presents: is it original, commonplace, unlikely, realistic, exciting? What kind of characters are portrayed in it: ordinary, adventurous, romantic? Are they well drawn and fully portrayed? Do they represent a human aspiration or need? Can one qualify the background as familiar or strange? Does the style offer a classical or an easy vocabulary? Does the author coin or favour new words? Which predominates, dialogue or description? What benefits—moral, cultural or literary—can the reader derive from it?

A Book of High-level Popularisation. Are its contents solid and up to date? Are they presented in a good and attractive style? Is the typographical lay out neat and tasteful?

A Scientific Book. Is it up to date? Has it any original contribution to offer? Does the author's analysis of the sources and subsidiary material show due acquaintance with them? Has it been a thorough analysis? Is the presentation of the matter satisfactory from the standpoint of literary norms as well as those of methodology?

3. Listening to talks and lectures

Talks and lectures have always constituted an important means of imparting knowledge and forming men.

With the advent of radio and television, the talk has been placed at the service of the most varied subjects. One must therefore learn to be not only a good reader, but also a good listener.

Of course compared to the reader, the listener, is at a disadvantage—he cannot set his own pace, but must content himself with that of the lecturer. Besides, he must pay constant attention, which is not an easy matter. Nevertheless, the lecture has several advantages over a book. It possesses the enthusiasm, the life of the living presence of the lecturer, and these open the way to reactions, ideas and resolutions. There is here a stimulating personal contact which a book is quite incapable of giving.

The first quality a listener to a lecture should have is politeness and consideration for both the lecturer and his fellow-listeners. One must assume a listening attitude, looking, but not staring, at the speaker. One should not show signs of impatience if he pauses now and then, or finds it difficult to express himself. Still less must one laugh or look meaningfully at others if the speaker makes a mistake. If questions are called for at the end, one should be considerate and courteous.

However, if a student wants to benefit by a lecture, he must be active as well as polite. For this, he must listen intelligently, ask intelligent questions when necessary, and do some judicious note-taking. What we have already said concerning activity in class must be applied here, too; so we will not repeat ourselves by giving the same rules again.

Here, it will be sufficient to recall that there are two kinds of lectures: *didactic and inspirational.* In both, the

approach is different, especially with regard to the manner of listening and the taking of notes. The object of the didactic lecture is to communicate, or at least to organise, knowledge. To some extent, it is like class, except that the listener obviously will not have a textbook and must consequently be careful, when taking notes, to recognise and jot down the principal points and the leading ideas which form the framework of the lecture.

On the other hand, it must be remembered that in a good lecture there will always be some irrelevant material to connect important things, and also some degree of repetition to help the listener's comprehension and allow him to relax. There is no need for such things to appear in one's notes.

Lectures of an inspirational character put the emphasis on application, on the living comprehension of the knowledge rather than on its acquisition. Although such lectures do instruct, usually it is not so much in the form of imparting facts or new ideas, as in giving new lights and angles on what one already knows. Their object is to stimulate the mind or the will, to arouse enthusiasm, to guide taste. They are very common, not only in the field of spiritual and personal formation, but in those of literature, art and philosophy as well. One should be prudent and moderate about taking notes at such lectures. Their importance lies in the fact that we meet a man who lives the particular subject he is dealing with and who is trying to communicate to others his outlook and the deep impression his subject has made on him. If we are busy taking down all he says, we may miss the impression which the lecture as a whole would have made on us.

4. Using libraries

The library is the scholar's complement; without it, intellectual work is difficult and that of investigation or research is impossible. A student should be as familiar with his college library as he is with his common room. And in later life, he should preserve this attitude regarding any library he may have occasion to use. There, he is provided with refreshment and instruction alike. Every student should, therefore, strive to learn how to use a library with ease and to develop a taste for frequenting them.[1]

Observing library regulations. On entering a library, the first thing to do is to acquaint oneself with its lay out and the regulations governing its use. A big library will generally have a printed guidebook giving its history, the more important collections it possesses and the conditions for using it. Even the smallest library will have a notice giving its time-table and regulations for the use of its books, etc. The following general rules hold good for any library and all who frequent them would do well to observe them.

First and foremost, noise must be avoided, as also anything else that would disturb one's neighbours in their reading, study and research. So, one should walk quietly, speak only when necessary and then only in an undertone.

Since library books are meant for the use of future students as well as present ones, they should be treated with care: a library book must never be folded back, one must not write with one arm on top of it or make any mark whatsoever on it. In some libraries, it is forbidden to touch manuscripts with the naked hand. As soon as one has finished with a book, he should return it, so that others may use it in their turn. Never should a book be taken out without complying with the required formalities. In that way the library will be better able to serve the public.

Finding books. Then there is the question of how to find the book you want. In a well-arranged library, any book can easily be found because of the perfection with which they are all classified, labelled and catalogued. That part of the library which serves the public is generally made up of four compartments: (1) the *catalogue* section, with the different catalogues (of books, periodicals, manuscripts, of certain other libraries of the institution, such as libraries of seminars, classes), (2) the *reference* room, which is mostly given over to works of reference, (3) the *deposit* or *stock* room, to which readers usually are not allowed direct access, and (4) the room for *periodicals*. The treasures of the library, at least in the bigger ones, are divided into three classes: manuscript codices, incunabula—books published up to and including 1500—and the books published since 1500. Even among the latter, there are rare and precious works. Each of these categories is classified and catalogued separately.

Library books may be classified according to the Dewey Decimal Classification, the Colon Classification or any other recognised or practical system. Each book has its place on a shelf according to its classification and is labelled with a *call number* that shows its location. The call number usually comprises two lines and may contain both figures and letters. The first line is the *class* or *classification* number and it indicates the section where the book is kept; the lower line is the *author* or *book* number and it designates the location of the book in relation to other books of the same section. The call number is written (or pasted) on the back (spine) of the book and in the book card (and book pocket).

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[1] What we have to say here about libraries, can be applied, for the most part, to Archieves and Museums as well. Reading of a "Library Manual", which deals with the organising and functioning of libraries, will help the student to use a library in the most efficient manner.

The *Catalogue* is our greatest aid in finding a book. It may be in the form of a ledger, but generally it is made up of cards on which are listed the authors, titles and subjects of the books that the library contains. In one of the upper corners of the card appears the call number. The *Author* card, or main entry, gives on the first line the author's name with the surname first, the title of the book on the second line and then the bibliographical and physical description. *Title* and *Subject* cards give the title or the subject on the first line. The cards are arranged alphabetically either in separate ("Author", "Subject") series or in a single alphabetical list for authors, titles and subjects alike. This latter kind is called a "Dictionary Catalogue". The cards are kept in the drawers of the card filing cabinet and there are guide letters on the front of each drawer to help one find the right card quickly.

To find a book, then, in any library, one has only to look up the "author catalogue", if he knows the author's name, or the "subject catalogue", if he does not. Then he jots the *call number* down accurately from the card and goes to look for the shelf section indicated by the *classification* number. Once he has found it, he has only to look along the shelves till he comes to the book bearing the *book* number given in the catalogue. Where access to the library can be had only through an attendant, he must write on a call slip the information required by the librarian.

In the case of libraries that have no catalogue, you can only approach the librarian and tell him what book or subject you want to study. He will probably be able to help you. When, however, both the librarian and the enquirer know nothing about the authors on a particular subject, they must look up the bibliography on it. By consulting the library's reference books, they can find a few books on the subject. They must then consult these, particularly the most recent, and there they will find the bibliography they are looking for, if there is one.

Chapter 8

WRITING AND SPEAKING

SCHOOL-WORK is not everything in a study programme. Extracurricular activities, like collaborating in magazines and taking part in debates or study circles, offer a great opportunity for furthering one's intellectual formation.

In your particular institution there may be a students' magazine, literary academies or writers' clubs, where students band together for mutual criticism and encouragement. Any student who is genuinely interested in his formation should feel it his duty to join in these activities.

1. Writing

Developing a latent talent for writing requires patience and perseverance. A theoretical knowledge of the rules and fundamentals of literature is not enough; this is to be presupposed in a person who has reached higher studies. One must have a special programme of reading and private exercises in writing, and keep at it silently and tenaciously. It is not an easy thing for an isolated student to persevere in such a programme. His reading programme is hard, because in order to learn to write one must read very slowly and selectively; his exercises in writing will not last long, unless he has someone to criticise and encourage him. For this reason, the academies and the college magazine will help him to persevere.

Writing will do the student one great service: it will oblige him to put his thoughts in order and make them clear. As long as our thoughts remain in the mind, they are inclined to be a bit vague. The effort required to express them adequately disentangles them from the mists of our mind.

A subject for writing

The student will find in his course of studies plenty of opportunities for the writing of various kinds of "papers": papers on *personal themes*, the fruit of his own experience and reflection; *research* papers, the result of some systematic research in the library; *critical essays*, where research and personal reflection are combined, etc.

Students, therefore, have a wide variety of "papers" to choose from. And yet, many find it difficult to choose a subject for such a paper, and excuse their passivity by saying: "I do not find anything worth writing about". To this we answer that there are worthwhile subjects within the reach of any student; it is enough that the subject interests him—and who can say he's not interested in anything?—and can be of interest to others. Any theme, provided it is clothed in the language of one's own personal experience and expresses what it means to the writer personally, has a personal touch about it which gives it a certain originality, and in that way it becomes interesting for other people as well.

A useful practice to help one in his search for useful themes is the custom of noting down possible subjects from one's daily reading and experience. Besides, this custom will make one more careful to profit by the formative riches each day brings with it for the student.

Organising and outlining a paper

The foundation for a good paper is the accumulation of suitable material and personal ideas, the more so if these latter are original. But this material must be presented in the right order, if it is to please the reader as well as enlighten him.

Just as with the lay out of a speech, the organisation of a paper always has something personal about it. One cannot, therefore, fix a uniform pattern for all papers. Every paper bears the stamp of its author's individuality. Nevertheless, there are some essential elements which are common to any well-ordered presentation, no matter what the subject is. Simplifying matters, we would say that every writing has a beginning, a body (with several guidepoints) and an end. Speaking more precisely, we would say that any written work is made up of an *introduction* and the formulation of a *thesis*, a *body* in which that thesis is developed, and a *conclusion.*

The *introduction* announces the theme and introduces the reader to the importance of the subject, or gives its background, or explains the way in which the author intends to develop his theme. A few sentences, sometimes even one, are enough to formulate the *thesis* or *scope* of the paper. The most important part of the paper, of course, is the *body*, for it is here that the theme is developed, the thesis explained, proved, confirmed by supporting material, and appropriately illustrated. The various related elements that enter in by way of proof, emphasis, comparison or contrast are co-ordinated and subordinated by transitional words or phrases. The body obviously ends up with the *conclusion*, which summarises the principal ideas contained in the paper, or indicates the horizons opened up by it.

Taking all this into consideration, the first step in the process of writing a good paper is to find one's way through the accumulated preparatory material by means of clear thinking and right organising. The result will be a good mental outline of the paper, or, still better, a written one.

A good outline takes shape of its own accord while one busies himself answering the following questions: What is the purpose or scope of this paper? How can I make a brief statement of the thesis? What are the chief points I must develop in order to attain the scope I have set myself? Which points serve rather to confirm or illustrate the more important ones? In what way are they related to the topic, and how are they related among themselves? Are they related in a cause and effect sequence, thus allowing me a topical outline, or is their relationship rather one of time or space, suggesting a chronological arrangement of the outline, as in historical accounts, or may be some special arrangement, as in geographical descriptions? By proceeding in this way, one can formulate the scope of his paper pretty clearly, write down the chief points and the secondary ones, arrange them in their proper relation of co-ordination and subordination, and open the way to the development of his theme in the right order.

From the first draft to the final, or fair, copy

The next step is to begin the redaction. Very often it is difficult to begin; one's mind baulks at the first idea or phrase to be set down. The best thing is to begin writing immediately, putting down the first phrase that comes to mind. That sets the mind in motion, so to speak, and facilitates the redaction. Afterwards, there is plenty of time to go back and correct or change the introduction if necessary. If the introduction as a whole should have a paralysing effect on you, go ahead with the body of the paper, and leave the introduction till the end.

In composing the first draft, it is advisable to write spontaneously within the framework of the outline. An excessive preoccupation with literary form and complete expression would be an obstacle to the flow of ideas. For, at this stage, the important thing is to get down on paper the substance of what one has to say. The result may be only a very rough draft, but at least there is now something to work on. A study of this draft will suggest the necessary changes: points that require touching up, some additions and, possibly, some things that it would be better to omit. If a clean copy is made at this stage, it should incorporate all these changes.

Now, after leaving the first draft rest for a day or so if possible, comes the final step in the redaction of a good paper: the critical reading of the draft from the point of view of right development of the theme and matters pertaining to its style. The whole work must be closely examined to make sure that the sentences express exactly what one intended, that they are clearly intelligible to the

reader, that the development of the theme is homogeneously progressive and balanced by the proper interrelation of the principal to the secondary and smooth connections, that the conclusions are based on sufficiently developed arguments. The correctness of the grammar, the clarity of the style, the division of paragraphs etc. must also be *studied.* The result of such critical reading will be the final or "fair" copy, a revised and polished paper.

The process from the choice of a subject to the final copy, which we have just analysed, will, of course, be easier for some students than for others. But there is no student who cannot, with practice and determination, arrive at expressing his ideas adequately in writing. And good writing is one of the sources of pure joy for any student, and a great asset for his future.

2. Speaking

Another activity that is very beneficial to one's formation is participation in study circles, giving talks, etc. In this kind of activity a person learns to think and to adapt the fruits of his study to reality. Here, one also learns to speak.

Being a public figure requires a certain facility and eloquence in the expression of one's ideas. There is no better time to acquire this than one's youth, when one can practise before one's fellow students who form an audience that is at once symphathetic and critical. This is the best time, too, to correct those two defects which threaten every would-be orator: a soulless, monotonous and hurried declamation of the text and a tendency to be too theatrical about it. Even at the cost of overcoming his natural shyness, the student must take an active part in this kind of activity. He will enjoy its benefits as long as he lives.

Planning a speech

In planning as well as in delivering a speech, there is one very important factor to be kept in mind, which is absent in the case of written paper, namely the listeners. One must be audience-minded.

A speech is planned along the same lines as those given for a written paper. The outline must include an *introduction*, in which the *purpose* of the speech is stated, a *body* and a *conclusion.* In the introduction one tries to win the audience's attention, interest and sympathy (benevolence). Successful speakers do this as briefly as possible by making some pertinent remark, or giving a few examples, or by bringing the subject into relation with the interests of the audience. At times an explanation of the terms, or a social or historical setting may be demanded by the nature of the topic. The *purpose* of the speech should be stated briefly and clearly, so that the audience has a definite object on which to focus its attention right from the start. The subject chosen for the speech should be well-determined and not too broad. The composition of audience, the demands of the occasion and the time at one's disposal are the essential factors in determining the limits of a speech. A mistake in any of these can ruin everything. In deciding how long a speech which has to be given in a fixed time has to be, one must remember that the oral presentation of a topic demands greater use of illustrative matter and transitional devices than a written one. Moreover, one must take into account the fact that unforeseen pauses and digressions may occur during the actual delivery of the speech.

The *body* of the speech contains the core of the subject, well-elaborated. A successful spoken presentation of the subject is the fruit of a right combination of main ideas and supporting matter, and of smooth transition from one point to another. The main ideas are those which the speaker is primarily interested in getting across to his listeners in a way that gives him ground for hope that they will understand and remember them. Frequently, these are very few, but they must occupy the key place in the planning and delivering of the speech. They must constitute its very backbone, everything else in it being subordinated to them, that is, serving in one way or another to make them better understood.

Supporting material is a necessary means to enable the audience to understand the keypoints and relate them to their previous knowledge or experience. They also help to sustain the attention and, not infrequently, they provide some relaxation for the audience. Into this category of supporting materials fall all such things as quotations, examples, comparisons, statistics, factual data etc. The utilisation and variety of these is, as we have said, more necessary in a spoken presentation of a topic than in a written one, where the reader can read and re-read at his own pace. The right use of supporting materials is subject, however, to one condition—they must be well-integrated with and subordinate to the main ideas. It would be a mistake, for instance, to make the speech a continuous series of quotations; these must be absorbed by the exposition, not dominate it. It would be equally wrong to make useless digressions or to convert the speech into an occasion for airing one's own ideas about extraneous matters, or to make excessive use of material meant for relaxation, thereby distracting the audience's attention from the main points entirely.

An important element in the right organisation of a speech is the planning of smooth and clear transitions from one point to another. When these transitions are awkwardly arranged or badly expressed, the audience is in danger of remaining somewhat confused about the development of the paper. These transitions should be more obvious in a speech than in a written paper. Outlining the main points at the beginning, re-stating them in the course of the speech, recapitulating at intervals and making the connections explicit are the usual ways of guiding the listeners through the oral development of a subject.

The speech is smoothly rounded off by the *conclusion*, which, according to the circumstances, will briefly recapitulate what has been said, suggest practical applications, or relate the topic to the interests of the audience.

Delivering the speech or lecture

The student must not be surprised to find himself apprehensive and nervous before giving a speech. Even experienced speakers feel some apprehension on facing an audience. But this is a help to them rather than an obstacle, because it keeps them alert and increases their desire to be in communication with the audience, both of which are very important factors for the good delivery of a speech.

One may distinguish two ways of presenting a subject to an audience orally: a speech, or talk, which is made with little or no help from notes, and a lecture (conference), which is based on a full written paper. There are cases, such as discussions and inspirational talks, that call for a speech prepared more on the basis of pattern and sequence of ideas than on a basis of memorised words and sentences. In such cases, provided one has the necessary command of language to be able to improvise his choice of expressions in the actual delivery of the speech, it is enough to prepare just the outline beforehand. This outline, however, must be sufficiently developed, the key ideas, supporting materials and connecting links being already formulated exactly. Secondary points may be indicated by key words. During the actual delivery of the speech, some conventional notes may help to keep up the plan.

There are times when one has to address audiences on subjects that demand the delivery of a full, written paper, as in the case of lectures. In writing such a paper, one must keep in mind the need it has of more supporting material and clear transitions than is the case with written papers intended for readers. On the occasion of its delivery, the speaker, even if he has the whole paper before him, should make every effort to ensure that his lecture will be spoken, not read. The paper should be a means, not an obstacle, to a good delivery. The words and rhythm of the sentences must be familiar to the speaker from previous readings. That will enable him to have a kind of conversational spontaneity in the delivery, and to keep eye-contact with the audience. An effective speaker tries to create always a current of mutual communication between himself and the listeners, by reacting to their reactions.

Obviously, one also has to observe the norms taught in the lessons on eloquence about the way to combat mannerisms in the course of one's delivery, how to establish and keep visual-contact with the listeners etc. Even the external appearance of the speaker must show that he is respectful and polite. The papers he brings as a help or a basis for his speech must be well-arranged and of decent quality. Numerous corrections and cuts in the paper give listeners the impression that the speech has not been duly prepared.

Chapter 9

READING

1. Necessity of reading

Every genuine student must live in continual contact with books. Nor must this contact be limited to purely academic studies; his reading must also be directed to the widening of his general knowledge. For this reason, it is important for him to acquire a habit of reading and to develop a taste for it. To books we owe the handing down of theology, mathematics, physics etc.—the transmission of the accumulated experience of bygone ages.

Besides, we belong to the book age: an age of avid readers and of vast literary output. The time is gone when it was sufficient for a man to store the fundamentals of the sciences in his memory. In our day, only an assiduous reader can hope to keep abreast of the progress made in the various sciences and enjoy the fruit of the rest. Reading is becoming as indispensable to the well-being of the mind as food is to that of the body. "The mind, like the body, must be nourished. For the mind's nourishment, reading is essential. Just as bodies feed on bodies, and you cannot nourish your body with an idea, so minds feed on minds, you cannot nourish your mind with a chop. Minds feed on minds. That is the definition of reading—a way of feeding your mind upon a mind richer than your own. You read a man's book, you grow with its riches."[1]

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[1] F. J. Sheed

Because reading has now taken on such importance, one of the purposes of University education, and indeed of educational institutions in general, is to teach men how to read and give them a taste for it.

Reading and formation

Reading is not merely a means of information, of instruction or of knowledge. It has, besides that, a decided influence on one's formation. It is to books that heroes, saints and criminals are to a great extent indebted for being what they are. "Tell me what you read," says the adage, "and I'll tell you what you are". A good book is a faithful friend whose inspiring influence can change a life; a bad book is a corruptor. It is easier to be loyal to one's ideal in a bad environment which one detests, than in the midst of corrupting books. Books have fashioned peoples, characterised different epochs of history and given rise to great movements throughout the ages. It is enough to recall the influence exercised by certain books on the movements in modern history: the Renaissance, the Enlightenment, Liberalism, Marxism.

The influence of books is especially important where young people are concerned, because it is these who are especially affected by it. This importance is all the greater since at that stage books can influence their whole future, and, through them, that of the communities and societies they will subsequently form. There are several reasons why it is the young who are influenced most. Not being sufficiently formed, their judgement is not yet proof against subtle errors and they lack the experience to discern any error clothed in beautiful raiment; then they are led by their passions more than older people; they have a quick sensibility and an urge to know everything and know it quickly; finally, there is the youthful openness of their faculties, which conserve first impressions more deeply the more sensitive they are.

It is this consciousness of the influence of books that has given rise to such sciences as: biblio-psychology, which studies the influence of a book on its reader, biblio-theraphy or the art of curing certain infirmities by means of reading, and the various measures taken by libraries and other educational bodies to ensure healthy literature.

2. Regulated reading

Reading is not without its pitfalls, and if one is to avoid them and get the best out of one's reading, then it must be well regulated and directed to a definite end.

The chief dangers come from disorder in the time allotted to reading, lack of purpose, choosing one's books too much at random, the nature of the reading matter itself and the reader's own indiscretion.

As far as the *time* is concerned, one must take care to give cultural reading only what time is left over from study; it must always be a help towards one's intellectual formation—never an obstacle. Reading must have *order* in it: what is of obligation comes first, then what is useful, and only in the third place what is merely enjoyable. Equally important is a *formative purpose;* reading as a mere pastime, with no such end in view, is a pure waste of time. All reading, even the recreational type, must serve some useful purpose, be it spiritual, scientific, literary or artistic. In the *choice* of books their formative value must again be the first consideration: bad or dangerous books can have no place in one's reading programme. In this matter, it is best to set for oneself a severe criterion: books that are apparently inoffensive can be more dangerous than manifestly bad books, because the latter are more readily rejected.

Finally, there is *indiscretion*—an inordinate passion for reading. Some people devour book after book, but reap no benefit from them, because, just as with food, the benefit is in proportion to what is assimilated and not what is eaten. In this sense, the saying that it is important to read "non multa sed multum" is perfectly true. Of course, one must not therefore confine oneself to one book. "I fear the man of one book" is another saying that is equally true. But one's reading matter must be selected and limited to one's capacity for assimilation. On this point, all writers are unanimous.

Choice of reading matter

If reading is to be beneficial, it is imperative that one chooses books carefully. The mass of today's literary output which threatens to enslave man, makes selection an absolute necessity.

This selection must be based on the intrinsic merits of the book itself and on its relation to the reader's vocation and present needs and circumstances. To choose a book just because it is fashionable or because you are taken in by the publisher's propaganda, the fascination of a catchy

title or a well-designed cover is to expose yourself to waste of time to the detriment of your formation.

The first thing to be taken into account is the book's intrinsic value—whether from a scientific, literary or moral point of view. A book should be judged by the recognised moral and literary standards. Is the information it gives correct? Does it respect moral and religious values? Does it reach a worthy literary level? Only when these questions can be answered in the affirmative is a person sure that he is reading a *good* book.

Time has tested the value of some books. They are the *classics*, the works of the great masters. These not only instruct, but they also make one think. Usually these great thinkers sum up in themselves the thought of past generations. They condense multiple experiences. From their books one gets a first hand knowledge of the leading ideas that have moved and taught the multitudes. Others only repeat what they have said, but without that power to stimulate so characteristic of the work of great thinkers. If your social life affords no opportunity for contact with genius, reading will give it to you: for that reason the classics, the immortal books which time has respected in different spheres of thought, must always be within reach.

This criterion of intrinsic worth must be applied to newspapers and magazines, too. Take, for instance, the newspaper. Newspapers exist first of all to give us the news and their comment on it; as well as that, they offer entertainment, practical assistance through advertisements etc. To judge, therefore, the value of a newspaper, one must see whether its news is accurate, fair and complete; whether its editorials are just, unprejudiced and morally sound; whether it shows good taste in its entertainment features; and, finally, whether it is reliable and honest in its practical and business section. Only then does one know if the newspaper is *good.*

The second consideration in choosing one's reading matter is the reader's *actual condition.* It is obvious that the reader's vocation, personal taste, formation, talents, age, and the field of knowledge he is trying to master must all be determining factors in the planning of a reading programme. With the vastness of today's literary output, he must be resigned to leave many things unstudied and unknown. A man must overcome the temptation to disperse his attention in widely differing fields and go his own intellectual and cultural way. He must reject a priori reading which is inspired by principles at variance with his vocation.

3. What one must read

With these general principles in mind, we can now trace out a programme of reading. For the sake of clarity and order in exposition, we will distinguish three fields of reading matter: (*a*) Spiritual and inspirational reading; (*b*) Formative reading; (*c*) Recreational reading.

a. *Spiritual and inspirational reading*

Spiritual reading must always find a place in our daily programme to safeguard us from the two dangers which threaten us: going round in circles within the same cycle of ideas and losing our enthusiasm in the monotony of the daily round. For this, the matter must be well-chosen,

suited to the reader's age and needs and to the circumstances at the time. Theoretical books—those that give us ideas and doctrine—must be combined with practical ones which show these ideas in action, incarnate in the lives of men of higher ideals.

Books of the stimulating and inspiring type must form part of any private library. We are always in need of such reading, but especially in times of intellectual or spiritual depression.

b. *Formative reading*

All books that can increase the knowledge acquired in the various fields of study or add to that general knowledge fit into this category. There are books which help:

To perfect one's humanistic and literary formation: the great classics of all ages and languages. In the literary field, the human spirit has such admirable creations, such wonderful and justly famous fruits, that they continue to be treasures of inestimable virtue in every age. A general history of literature would be very useful in order to understand the various authors better and to get an exact idea of each and of the value of his works.

To complete one's cultural formation: For this purpose, it is most helpful to read history: world history, that of one's country, biographies of the great figures of history. History has a great amount of practical wisdom to teach us—"History is life's teacher". By freeing us from the confines of our own country and the problems of our own day, it widens the horizon of our vision and hopes.

To complete one's scientific formation: One must keep abreast of the progress made in the sciences.

It is useful, therefore, to read a good modern book on anthropology, astronomy, botany, biology, paleontology or prehistory now and again. These will keep us up to date in the field of science and enable us to converse intelligently with the cultured.

To widen one's economic-social formation. Social questions have a primary importance in modern life.

To complete one's philosophical formation: The student must never give up reading philosophy, which seeks the ultimate rational solution to all the most important problems. Moreover, in the midst of so much philosophical writing of heterodox tendencies, he must keep to the sound ones. The study of psychology will help him to know himself and others. The history of philosophy will show him man's constant effort throughout the ages to investigate the "wherefore" of things.

Books of topical interest and reference books: The reading of books and articles on current topics is undoubtedly a necessity. One must be alive to the problems and solutions of the day. Nevertheless, moderation is also necessary in this as in everything else. There are people who limit their reading entirely to the latest book and the daily paper. It is well to remember Emerson's advice: "Never read a book that is not more than a year old". Because, by that time, if a book is not good people will have ceased to discuss it. So, it would be useless to read it. While not denying new books their value, the immortals must not be forgotten. The necessity of keeping abreast of the news and events of the day must not make any one fall into the danger of reading nothing but the latest, of becoming so superficial that he is no longer able for a serious book.

Nor must reference books be absent from his book shelves: there are some which he will frequently need, such as a good lexicon, biographical and historical dictionaries, etc.

c. *Recreational reading*

At times, a certain amount of recreational reading will be profitable. But here one must not think in terms of cheap literature. There is an abundance of relaxing literature which, at the same time, is inspiring and formative. Many intellectual workers find relief and attraction in biographies, history books, travel stories, art, criticism and poetry. In fact many of the works we have recommended above can also be matter for recreational reading.

Still the seriously minded young man can permit himself some honest relaxation from time to time, which will help him at the same time to develop his latent aesthetic qualities and literary talent, by reading:

(a) *Literary works in vogue at the time:* Here the student must be careful in his choice. Nowadays, many very mediocre books enjoy great, though short-lived, popularity through clever publicity and the influence of literary associations that control a great deal of the reviewing.

(b) *Poetry:* Lyrical and romantic works, and a skeleton selection of drama and comedy to educate one's sensibilities and to enable one to study life in social circles.

(c) *Novels:* Of these Sertillanges simply says: "There must be no question at all of poisoning your mind with novels. One from time to time, if you like, as a recreation and not to neglect some literary glory, but that is a concession; for the greater number of novels upset the mind without refreshing it; they disturb and confuse one's thought."[1]

4. What must not be read

No student can close his eyes to the moral, mental and social influences that books can wield. There are books that are positively evil and others that are dangerous, if not for all, at least for a certain type of reader. Anyone who values his moral and mental well-being, any young man solicitous for his character or his career will not proceed to read just anything that comes his way. Just as anybody with this attitude to food will ruin his health and thereby endanger his life, the man who reads everything he picks up will destroy his mind and his ideals. Even the very authors of dangerous books have not always allowed their own families to read their books. Zola, for instance, would not let his children read his novels. And when Nietzsche's mother asked him which of his books she should read, he replied: "None; they were not written for you".

a. *Forbidden books*

It goes without saying that one must be grateful when the State proscribes books that menace public

order as when it forbids the free sale of poisons, and prescribes that they be sold only by chemists and then only on receipt of a prescription signed by a physician.

b. *Dangerous books*

Besides the positively evil book, you have the dangerous book in which the poison is less apparent or mixed in with real literary merit. For subjective reasons, it is very often difficult to draw any hard and fast line between the two. The reader's temperament, age or moral condition can render a dangerous book positively evil. And in some cases an indifferent book may be a source of peril. A perfectly innocent work, like a treatise on anatomy, may be used wrongly by a child or a person devoid of the necessary culture.

But, even objectively speaking, there are books which are dangerous for everybody. Such books must be handled with due caution and prudence, and that only after having sought the advice of some competent person.

5. What books should one buy

To build up a modest but well-chosen library of one's own is evidently a very advisable thing to do. It can be of great service in later life.

The principles we have expounded with regard to the reading of books will serve as a guide in buying them, too. Here we would only add that, normally, one should buy only the best books, those that deserve to be read several times over, and which will be useful throughout one's whole life.

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[1] *The Intellectual Life*, 103.

6. How to read

Many are they who read, but not all read well and fruitfully. For this, it is necessary to avoid certain defects. The commonest are a lack of purpose in reading, dissipation of the spirit, and passivity in any of its forms. But to read well, one must approach it correctly, and with the essential qualities of attention, reflection and a critical spirit.

a. *The right approach to reading*

Our approach to reading must be determined by the kind of material to be read and the purpose for which we are reading it.

Reading for the purpose of intellectual formation: The purpose of this type of reading is to equip the mind with a useful fund of knowledge. Here we can distinguish: study, criticism and consultation. In the first two types, the guiding principle is to read with sustained attention and full activity—pen in hand, even, to take notes and get the most out of every page. It is in these two that the four stages of any fruitful reading—recognise, organise, elaborate and evaluate—must find their strictest application. In consultative reading, one can utilise "skipping", i.e., the art of passing over what is not to one's purpose, "skimming", i.e., the art of getting from a book just what we happen to want at the moment.

Recreational reading: In this, profit and rest must be combined. "Read something that you like, that does not excite you too much, that does not harm you in any way; and since even when you seek distraction you are leading the consecrated life, have the intelligence to read, amongst the books that are equally effective in resting your mind, what will also be useful otherwise, helping you to develop your personality, to adorn your mind, to be a man".[1]

Where literary works are concerned, we must remember that they will not increase our vocabulary or admit us to the genius of the language unless we read them with a critical spirit—analysing, comparing and reflecting. These bring us to the qualities of all good reading.

b. *The qualities of good reading*

Good reading habits. Besides taking care that the physical conditions for reading—the same ones as for study—are right, one must cultivate good habits in reading. Among these is the acquisition of fast, easyflowing reading, free from the handicap of bad habits.

Recently, the "mechanics" of reading have been studied with a view to helping the student to acquire the right speed in private reading. Obviously, what matters is not the number of pages one can get through, but how much one can get out of them. Nevertheless, a certain rapidity is undoubtedly an advantage to intelligent reading. Slowness due to such bad habits as vocalisation, unnecessary regressive eye movements, fixation of the eyes at the ends of lines etc. must be avoided. The purpose of reading is comprehension, and it has been found that rapid reading favours the comprehension of ideas. A phrase reader is better than a word reader. Not everything, however, can be read at the same rate; the subject matter will determine that.[1]

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[1] SERTILLANGES, *The Intellectual Life*, 114.

Order. The development of the book must be followed step by step; jumping from one part to another only leads to confusion, except when one is merely consulting.

Attention. All the energies of one's spirit must be concentrated on the reading matter. Any scattering or distraction of the attention must be avoided as the worst enemy of fruitful reading. You must read a book as if you were sure that you would never again have an opportunity of reading it.

Reflection. Reading is not merely a matter of getting meaning from the printed page; it is also a bringing of meaning to it. This is obtained by meditative reflection—pondering over what one is reading and considering it from different angles.

An active and critical spirit. What we have said about reflection indicates that reading requires activity and criticism on the reader's part if it is to be of any good. Passivity and laziness are enemies to be feared. If one reads passively, i.e., without reasoning, arguing, contradicting or evaluating, he can read encyclopedias and even whole

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[1] BERNARD, *Psychology of Learning*, 29-33; LASSO DE LA VEGA, *Como se hace una tesis doctoral*, 78.

libraries without growing intellectually. He may be able to store up a great deal in his memory, but it does not fertilise or nourish his brain in the least. Such passivity may be due to laziness, lack of intelligence, timidity or a not very praiseworthy intellectual humility which is too docile to the author.

Activity presupposes, in the first place, readiness to solve any doubts arising from one's reading; that a student never passes over something he does not know—words, names, historical events etc.—if they are necessary for the understanding of the book. It likewise includes criticism of the reading matter.

One needs a healthy and balanced critical spirit which will not admit ideas without analysing them, nor an argument without examining it, which will pause to admire a beautiful idea or noble sentiment, a spirit which will judge, compare, argue, correct, and finally reach the ability to distinguish what is false, weak or mediocre from the true, the strong and the beautiful.

In that way, our reading will be beneficial and the book will become part of our very substance.

Taking notes. "To read without selection is useless". Taking notes helps to render our reading efficacious and makes its fruits to a certain extent imperishable. But of taking notes we shall speak in another chapter.

Chapter 10

NOTES

We saw already that note-taking is part of the process of understanding a book or a lecture or a class. Reading or listening, pen in hand, compels one to follow the matter in question with reflection. We shall treat now of how to take and arrange notes with a view to a future concrete intellectual work, or for general utility.

1. Necessity and utility of notes

It is of paramount importance for the student or research-worker to take notes on what he hears or reads. In fact, we see from history, that learned men, even those who were gifted with a retentive memory, were diligent in making a record of their personal studies.

Obviously, notes do not dispense one from memory work; they are an aid to remember what has been learnt. The power of recollection is limited in man, and the index of forgetfulness, though different in different persons, is always considerable. Notes are a means at our disposal to preserve what the memory does not succeed in bringing to our mind at once.

Besides, a widely read man who, however, does not take notes knows that something has been written on such and such a subject. But he who has taken notes, will be able to quote the book or the review and even the exact place where such a subject is found. Thus he will be able to help those who ask him and save much time.

Finally, in notes which we have taken with care and order we shall find an immense treasure for our life and other intellectual activities. They can give us abundant material for lectures, study-circles, etc. Whenever one finds oneself without books, these notes will be an immense help.

It would be a mistake, therefore, to think that only those who aspire to become writers of books and articles have to take notes, or that one need take notes only when one is actually engaged in preparing a particular scientific article or book. Certainly, people who are expected to talk, instruct, and form others can profit immensely from note-taking.

2. Matter and sources of notes

According to the end in view we may distinguish two kinds of notes—notes of general utility and notes with a view to a particular scientific work. To the first kind belong the notes we take in view of our general formation, that is, in view of our future ministry in all its aspects. Hence, the matter of these notes is vast; it may comprise a variety of subjects, the determination of which depends upon the personal utility one envisages. Notes of the other kind have a limited scope; they are taken with a view to preparing a book or an article on a given subject. The source of the first kind of notes can be various. They may be taken from books, reviews, dailies; they may come also from different personal contacts with persons and places. A curious mind finds food to enrich itself in the thousand and one manifestations of daily life. The second type of notes will be taken, generally speaking, from the sources, subsidiary books, etc. which deal with the subject in hand.

3. How to take notes

The utility of notes depends largely on the care one takes both in collecting and classifying them. While collecting them, the following points should be taken into account:

Diligence. Each one must begin to take notes as soon as possible; there are examples of persons who began taking them from childhood, and thus acquired an immense treasure of knowledge for personal use. On the other hand, it is never too late to begin.

And once the work has begun, it should be continued with perseverance; the very habit of taking notes will make the task easier day by day. One might say that no book should be allowed to pass from one's hands without taking some notes, or at least, without the personal opinion which the book deserves being jotted down.

With a purpose. Notes are not an end in themselves, and hence it would be bad to amass notes merely for the pleasure of filling a copy-book, or a card-index. This would destroy the value of our collection.

Notes are meant for a personal end: to help one in study, or in the preparation of a particular literary work. Consequently, one must take notes only of those things which may serve the end in view.

Discretion. From the two above-mentioned qualities follows a third one: discretion, which is not easy. Notes have to be taken only after mature reflection. One should not allow oneself to be carried away by first enthusiasm. Before taking down, it must be seen whether the thing is not only valuable in itself, and in theory, but whether it is useful for the writer, and whether the best manner of preserving it is to make a note of it.

Each one has to decide for himself in this matter. We may, however, give a few indications to be followed in compiling our notes, both general and particular.

Notes of general utility. Notes of general utility may concern certain aspects of the matters one has already studied in class, but are not to be found in the textbooks or the class-notes. They can also refer to subjects of general culture. It is advisable not to take notes on subjects not yet studied, but which are on the programme, for those notes may prove to be useless if they merely refer to things which will be done in class.

The general field of our culture should be a guide in the collection of notes.

As we said, notes on matters that are found in ordinary books must not be taken. There is no reason for spending time and energy uselessly on things which are found in books of ordinary use. Likewise there is no need to transcribe passages of books which one has at hand. It will be useful however to take a reference to passages which can be of use. It is equally a waste of time to take note of an idea which we have already found in another author, unless the new way of expression is of interest.

Notes with a view to a particular scientific work. When preparing a scientific work on some particular subject, one must take note of whatever may have relation to the subject in question, or whatever may help to understand and solve the problem at issue. Thus the notes may include bibliographical information, documentary matter, material of a subsidiary character, etc.

4. Different forms of notes

Notes can take the form of a literal transcription of a passage, a summary of it, or a mere reference to it. In every case, notes should have the following essential quality: *precision*, that is, accuracy in transcribing or summarising, and in giving the exact reference to the source from which a note is taken. If the note is a personal observation, reference should be made to the circumstances of time, place, etc., which originated the observation in question.

The form of the notes will depend on their matter and the end in view:

(a) *Literal transcription* is necessary when one wants to give a textual quotation, or when the passage in question is a historical or scientific document which one wishes to have at hand for future reference.

Absolute accuracy is necessary in literal transcriptions: accuracy in the words as well as in the bibliographical elements. When this accuracy is absent, the quotation loses its scientific value. If, for the sake of clarity, we add an explanation of our own, we must put it between square brackets.

(b) *A summary* of a passage is sufficient when we foresee that we shall have the book or the original document at hand. The object of the summary may be the ideas, arguments, methods, illustrations, etc. of the book.

(c) *A simple reference* is in order when we have the book

reference. The reference gives the idea of the passage in question, and the exact source.

(d) *From magazines* or papers that are not usually kept, one may take cuttings of passages that are of interest. The correct reference (title, date, etc. of the Review) must be written on the cutting. Obviously, this method should not be used regarding magazines that are worth keeping. In that case, a simple reference will do.

5. Where to write notes

There is no single method to be followed in the actual practice of writing notes. The most commonly used methods are the following:

a. *Fixed location: copy-books*

This method consists in taking a simple blank copy-book and writing in it consecutively the notes which one wants to take.

Notes on the most varied subjects (*silva rerum*) are written in these copy-books. A systematic index at the end will refer to the different notes according to the subject. One may also assign different sections of a copy-book to different matters. Or again, one may also use different copy-books for different subjects.

This method was very much in use in olden times. Today it is generally abandoned because it has many disadvantages. It does not permit an accurate and detailed classification of notes. Because of fixed location, it does not allow the putting together of notes according to one' s needs. so its usefulness for scientific work is rather limited.

b. *Relative location: loose-leaf or cards*

In the *loose-leaf* method, the leaves are held together by some device which can be easily unlocked to allow of leaves being removed or added.[1] In the *card* system, each item is entered on a separate card. The fact that notes are taken on loose-leaves, or separate cards, allows one to put them together according to the method of classification that one follows; it also allows additions to, or destruction of, the notes taken; it also permits the use of them singly or collectively. Because of the relative location which the cards have in this method, this is the most commonly followed today.

That this loose-leaf method may give the desired results, certain rules have to be followed regarding the size of cards and the manner of keeping them.

i) *Size of cards.* The extent of the notes may require, or the end in view will dictate, a particular size. It must be noted, however, that whatever be the size or shape one chooses, uniformity has to be kept, and the cards have to be well cut—any binder or printer can do this—in order that one may be able to handle them easily and accurately.

There is a recognised international shape for cards, taking as basis a *foolscape page:* In Folio: 340 × 210mm.; Quarto: 170 × 210; in Octavo: 105 × 170; in Decimosexto: 85 × 105. For *bibliographical* cards, a 75 × 125 mm. size, which coincides with the size of the cards for Library catalogues, is commonly used. It is good to stick to these models as there are ready-made cards of these kinds as well as ready-made cases for their use. There are also cards in different colours, to make classification easier.

ii) *How to write notes on the cards.* Obviously, the handwriting has to be legible, even after a long time has elapsed since the writing. Pencil-writing should be avoided, as it will not last. On each card, *only one note* must be written, that its classification and use be easier; *on one side only* for similar reasons; if one card is not sufficient, the note could be continued on another card.

Each card must contain a *title,* which indicates the subject of the note and its place in our classification. The title is usually written on the top right hand corner of the card. In the centre or the top left hand corner of the card the name of the author from whom the note is taken is given. Then some space must be left blank. The actual note is written below and enclosed by inverted commas if it is a textual transcription. At the end the exact reference is to be noted. It is useful to leave some margin or space on the card for future bibliographical or other remarks.

iii) *How to keep the cards.* Sheets and scraps can be kept in envelopes or paper folders or cardboard cases. Each paper folder may contain notes of one category, and paper folders containing notes of related categories can be grouped and kept in compartments of a rack.

Cards may also be kept in specially made card-cabinets. This last method is useful in a special way for small sized cards. These cards are kept loosely so that they can be added to, or subtracted from, as needed. They are distinguished by labels on the drawers of the cabinet, and, inside the drawers, by guide cards (at times coloured cards) with tabs projecting above the other cards, and bearing the subject matter or the class number. These cabinets are similar to the subject card-catalogues for libraries.

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[1] Cf. J. Parisot, *Etude et Ministere. Comment classer ses notes* (Paris 1958) 45-48.

6. Classification of notes

The utility of notes depends very largely on their proper classification, that is, their right arrangement in classes according to subject. A mass of ill-arranged notes is next to useless, because of the difficulty of finding them at the opportune time. Therefore, we require a method of arranging cards in a way that permits us to find what we need easily and quickly.

(a) *Qualities of classification.* The right arrangement of notes supposes that one has chosen a method to follow. Any method of classification should have the following qualities: It must be *complete.* The classification has to include all subjects of general utility besides those of each one's speciality. The classification must be *flexible* and *expansible,* that is, it must permit the addition of new divisions and sub-divisions of subjects as one proceeds further, or as the sciences advance. Finally, it must be *simple* in the choice of titles and signs of reference. To this end, the classification must be *logical,* dividing the sciences or ideas according to the relations that exist among them, and adopting signs of reference that can be easily committed to memory.

(b) *Systems of classification.* The methods of classification of subjects usually follow an alphabetical or systematic order.

i) *Alphabetical system.* In the alphabetical system, the subjects are arranged according to classifying key words, which, in turn, are arranged in alphabetical order, as the subject is classified in an alphabetical encyclopedia. The disadvantage of this method is that it is not easy to find the appropriate classifying word, nor is it possible to put under one word the different aspects of a subject or ideas that are similar.

ii) *Systematic classification.* In systematic classification, one draws up beforehand a catalogue of subjects with divisions and subdivisions of the matters about which one desires to take notes. This method is good for a particular work, of which one has a pre-arranged and detailed plan. Every division and subdivision must bear a serial letter or number for easy cataloguing. For general use, the systematic classification which one has made himself has the disadvantage of being too rigid and not sufficiently detailed. Moreover, it is not easy to make one's classification complete and well ordered.

iii) *Decimal classification.* To minimise those disadvantages, and to save us time and labour in making our own systematic classification, several classification schemes have been devised in the 19th and 20th centuries, which can also be applied to the classification of one's personal notes. The most important are: the "Decimal Classification" by Melvil Dewey (1873, U.S.A.), the "Expansive Classification" by C.A. Cutter (1891, U.S.A.), the "Congress Classification" followed by the Library of Congress (1904, U.S.A.), the "Subject Classification" by J.D. Brown (1906, U.S.A.), the "Colon Classification" by S.R. Ranganathan (1933, India) and the "Bibliographical Classification" by H.E. Bliss (1934, U.S.A.).[1]

The method, which has proved the most rational and useful, and which has been accepted as the standard everywhere, is Dewey's Decimal Classification (DC). Invented in 1873 by Melvil Dewey (1851-1931) for the classification of the Amherst College Library, it was presented to the public in 1876 in an anonymous book called "*A Classification and Subject Index for Cataloguing and Arranging the Books and Pamphlets of a Library*". In 1895 the "Institute International de Bibliographie" decided to use the DC as the basis of bibliographic classification for its international subject index. The DC has spread the world over and it is used for the classification of archieves, libraries, private institutes, bibliographical publications, magazines, etc. The DC may be applied to books, or to notes, and so on. By its nature, the DC admits additions and modifications; in fact it has received many additions between the first edition and the latest, the sixteenth edition.

The DC is based on a conventional, perhaps arbitrary but practical idea: the arrangement of all knowledge in ten classes (numbered from 0 to 9), each of which can be subdivided into another ten, and so on indefinitely. It can express two thousand million subjects.

The editor explains the method as follows: "The Decimal Classification divides all knowledge, as represented by books and other materials which are acquired by libraries, into nine main classes, numbered by digits 1 to 9. Material too general to belong to any of these classes, such as newspapers and encyclopedias, falls into a tenth class numbered 0 which precedes the others. The classes are written as hundreds; thus, 000 is general works, 100 philosophy, 200 religion. Each class is separated into nine divisions, with general works on the class occupying a tenth division which precedes the others. Thus, 500 is pure science in general (dictionaries, periodicals, collected essays, and the like) while 510 is mathematics, 520 is astronomy and allied sciences, 530 is physics, and so on. Each division is again divided into nine sections preceded by a general section; thus, 510 is mathematics in general, 511 arithmetic, 512 algebra, 513 elementary Euclidian geometry. Further division, to the extent which may be desirable in order to bring together like materials and separate unlike ones, may be made by the addition of digits following a decimal point.[1]

Each idea, therefore, receives a classifying number with perfect and constant precision. To find, for instance, something related to the life of Christ in a catalogue arranged according to the DC, or to write notes according to the same classification, the DC index will lead through RELIGION-DOGMA-CHRISTOLOGY-LIFE OF CHRIST with the corresponding numbers 232.9. The classification table is less complicated than it appears at first glance; it is not difficult to master the first divisions.

A last word of advice regarding classification methods: one must be realistic and practical. The classification is to help us, not to enslave us. We can make additions to the divisions and subdivisions offered to us in the different systems, till we feel that we have our own method, which enables us to classify our notes quickly and to find them without trouble at the moment of work.

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[1] Cf. LASSO DE LA VEGA, *come se hace una tesis doctoral*, 134-45.

[1] *Dewey Decimal Classification and Relative Index*, Devised by Melvil Dewey 16th ed. I (New York 1959. 7.)

Chapter 11

SCIENTIFIC WORK

By scientific work we mean research work on a given subject, and the exposition of the results of this research. In this chapter we shall speak of the essential characteristics an intellectual work should have in order to be scientific, of the dispositions with which one must undertake such a work, and of the so-called "sources" and "subsidiary works" or "aids" of a scientific work.

1. General characteristics of scientific work

A research work, to be scientific, must have the following qualities: it should be first of all a direct study of sources and subsidiary works; it should be a complete analysis of the same, and, finally, it should observe the fundamental rules of methodology in research as well as in exposition.

Hence, the mere number of citations *ad calcem paginae*, or the profundity of the treatment or the use of technical terms, does not make a work *scientific*. Such a work may be a manifestation of the writer's erudition and wide reading. But if it lacks the qualities mentioned above, the work cannot be considered strictly scientific.

The essential note of a scientific work lies in the direct recourse to sources. It is in the sources that we find *fully and safely* the data necessary to solve the problem we have in hand.

Complete data. Sources alone can give us all the data in their originality. The mediate witnesses, or books written on the sources, will rarely give us all the elements, for a writer nearly always makes a selection regarding the substance or some aspects of the problem according to the particular end he has in view.

Safety. Moreover, sources guarantee accuracy. In the books written on the sources, there is always the possibility of distortion, of false interpretation and the influence of preconceived ideas. The changes that an event or doctrine suffers while passing through different minds show us that a similar process regarding the data of sources may take place while these data pass from book to book.

It must, however, be noted that direct access to sources does not mean that we do not take into account the books already written on the sources. The study of these books is necessary, in order to avoid waste of time, and as a means of scientific progress. But recourse to them is always of secondary importance.

2. Dispositions for scientific work

In addition to the virtues required in any student, of which we spoke in the third chapter, the man who desires to dedicate himself to scientific work should have certain psycho-moral qualities.

a. *Love for, and submission to, truth*

The fundamental disposition of such a man is the love, nay, the cult of the truth. All the means which he uses, the methods which he follows and the pains which he takes are ordered to one end: to discover the truth and to express it faithfully. This search after truth requires from the

research worker certain well-determined mental attitudes in the course of his work.

i) *To begin the work without a priori conclusions.* The scientific man should begin his research without prejudices which cloud his judgment or distort his critical sense.[1]

One would seriously prejudice the whole scientific process by starting with some cherished solution; such a mental disposition has the effect of making the research and the interpretation of sources less objective than they would otherwise have been. It causes one to neglect or not to appreciate sufficiently the arguments less favourable to one's preconceived thesis, and to focus one's attention on those points that seem to confirm one's views. And the result is not a scientific work, but a conscious or unconscious scientific deception.

ii) *An open mind during the research work.* The mind must be open and receptive to the solutions that spring from study. The love of truth has to manifest itself in everything: in the accuracy with which the sources are examined, in the honesty with which difficulties are faced, etc.

iii) *Honesty in exposition.* Finally the exposition of the findings of one's research must be done with the utmost objectivity. What Leo XIII, quoting Cicero, said in connection with historical methods holds equally good for any other scientific work: Not to dare say anything which is false nor fear to utter anything that is true is the first law of history, so as to avoid the suspicion either of partiality or of hostility. This honesty has to extend to the transcription of documents, and to the way of writing, so as to insure that readers get no wrong impressions or false perspectives. Thus, for instance, it would be against honesty to amass references that favour one's view, and omit or minimise references that point in a different direction.

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[1] Cf. GARRAGHAN, *A Guide to Historical Method*, 43-52.

b. *Perseverance*

A scientific work is the fruit of tenacity and perseverance. Inconstancy and indolence are the greatest enemies of a research worker; many talented people do not produce works of real merit or do not complete them because they succumb to the difficulties which a concentrated and prolonged labour entails.

Ramon y Cajal gives the following explanation of the successful scientific work done by savants: "Their secret lay in their method of work; in the fact that they utilise for their work all available time; in never letting a day pass without consecrating at least two or three hours to the task; in checking prudently intellectual dissipation and the loss of time that goes with too much social contact .... In short, all great works are the fruit of patience and perseverance, coupled with attention tenaciously directed for months and years towards a particular object".[1]

One must be convinced that the production of a scientific work requires time. Many things are necesssary for the solution of a problem: collection of all the elements that may throw light on the question, critical evaluation of the same, a synthetic view of the whole question, and finally, the written exposition of the findings of one's research. If we analyse the several steps which one must take before one arrives at truth in the positive sciences (experimental, juridical, exegetical, historical, etc.) we shall see that the way—at times called "dynamic internal methodology"—is rather long; one begins with facts or data that are already proved; the mind thinks over these elements in order to find their explanation; hypotheses are made, and tested by examining whether they agree or not with facts. Once an hypothesis is found satisfactory, the truth is defined and presented.

Obviously, all this demands time. Therefore, the scientific process is long. Besides, our faculties have moments of depression as well as of inspiration. One may happen to spend a long time without finding any solution; this solution may later appear all of a sudden. Such moments of inspiration give much spiritual delight. And yet, even though these solutions seem instantaneous, they are the result of prolonged mental effort.

c. *High ideal in view*

This prolonged, patient and constant labour will not be possible unless one has a very high ideal in mind. It is this ideal that will help one to renew and concentrate the energies, and to persevere in the work.

Love of the progress of science or of the glory of the Fatherland has moved many savants to sacrifice themselves at their desks.

On the other hand, scientific work affords the one who dedicates himself to it great and intimate joys. The conquest of truth in a personal manner is one of the greatest human joys.

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[1] RAMON Y CAJAL, *Reglas y consejos sobre la investigacion cientifica* (Madrid 1933) 17-19.

d. *Self-confidence*

While doing scientific research, one must not succumb to an undue sense of pessimism or inferiority complex. Sometimes this sense may be camouflaged laziness. Admiration for works of great talent need not create the impression or belief that nothing more remains to be done in the domain of the sciences, even theological, or that one's own talents are not able to produce anything worth-while in the matter.[1]

There are still scientific themes to be studied. An average mind, by dint of continued application, is able to probe a subject and produce something original. One's own personality should remain immune even in contact with great authors, thus leaving open the possibility for personal reflection. On the other hand, one should also beware of the opposite defect: too much confidence in oneself, a total independence of other authors, present or past. In both cases, the mind would lose flexibility and vision, which are necessary in the scientific field.

3. Sources and subsidiary works

As we have already said, an essential characteristic of a scientific work is the study of sources and subsidiary works. Hence, in each particular case, we must distinguish works that have the character of *sources*, and others that have the character of *subsidiary works*.

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[1] Cf. ALEX F. OSBORN, *Applied Imagination* (Allahabad, St Paul Publications, 1961) 33-36.

A. *Sources in a scientific work*

(a) *What are they:* The word "source" in classical language means a work or document in which there is found first hand material for the solution of a problem. *Source* (*fons*) is a metaphor taken from water, found pure and limpid at its original spring, not in subsequent rivers or canals.

The term was first used in the historical sciences. "A historical source" is whatever gives direct or indirect information about historical events—be it information handed down in inscriptions, statues or in any other way. When the term "source" is applied to other sciences (philosophy, theology, etc.) the word means any work in which the matter of our study is treated as if in its original form.

(b) *Some divisions of sources:* i) By reason of their *originality*, sources (especially historical) are called "*first hand* or *immediate*", and "*second hand* or *mediate*". The first hand sources are the original documents or witnesses that had personal contact with the matter or event, whereas second hand sources draw their knowledge from the former, or are witnesses that had not personal contact with the events.

ii) With regard to *textual transcription*, sources are divided into *primary* and *secondary*. Sources are called *primary*, when we cannot go beyond them, either because they are first hand, or because further sources from which they took their information are unknown to us. *Secon-*

dary sources are those which admit of access to further sources on which they depend.

Obviously, first hand sources are always primary, but not viceversa. It is to be noted also that a second hand witness may be quite trustworthy.

Secondary sources as such do not add anything to the primary sources. Often it may happen that repetition of the same narrative weakens its truth. This is why one has always to examine events in their primary sources whenever possible.

iii) By reason of their *literary form* and probative value, sources may be *narrative* or *documentary*. *Narrative* sources give merely a description or narrative of an event by a private person as such. Hence they bear the personal touch of their author. They are not intended in the mind of the author to prove anything. Such are, for example, diaries, annals, chronicles, letters. *Documentary* sources, on the other hand, contain documents in the strict sense of the word, that is, testimony given by a public person as such.

In a general sense, a document is anything, written or otherwise, about the past, i.e., any monument of the past. But in a strict and specific sense, by documents we understand sources which contain writings by public persons as such. These writings are subject to certain rules.

B. *Subsidiary works for scientific research*

Subsidiary works are all those books or tracts, which help, in one way or another, to promote scientific research in general. They are called for this reason "aids" to scientific research.

The most important of these works are: (1) *bibliographical aids*—bibliography, catalogues, (2) *philological aids*—lexicons, concordances, and (3) *works of reference*—encyclopedias, dictionaries, scientific manuals, monographs.

The character and purpose of a particular scientific research determine what works are to be used as sources, and what as subsidiary works. The same work can be a source for one study, and an aid for another, and even source for one aspect of a question, and aid for another.

4. Reading of sources and subsidiary works

We should make clear in our research work what are our sources and what our subsidiary works. Even in the matter of reading alone, the two elements present themselves. Hence the question arises: which should be read first.

a. *When the sources and when the subsidiary works should be read*

Fonck maintains that sources should be consulted as soon as the student has a general idea of the question under research. Subsidiary works are to be read after the study of the sources. Thus, the danger of being prejudiced by what has been read in other books will be avoided.[1]

Guibert, on the other hand, advises that the reading of subsidiary works should precede the study of the sources. For only thus will the student be sure not to waste time by going through problems which have already been solved. Moreover, in that way he will also be enabled to read the sources more carefully, fixing his attention on details which otherwise might have escaped him. The objectivity of which Fonck speaks will be preserved if the reading of subsidiary works is done, not blindly, but with critical criterion.[1]

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[1] *Il metodo del lavoro scientifico*, n. 43.

We think that the appraising of the sources should be done before the "critical reading" of other works, in order to save objectivity and to favour personal, and perhaps original, ideas on the problem. The danger of being influenced in the interpretation of primary sources by what one has read in secondary sources and other subsidiary works is only too real, and so it is better to work first on primary material. We speak, however, of deferring the "critical reading", for a selective and cursory reading of subsidiary works that will give proper orientation in the problem and make our study of the sources intelligent should be done first of all.

b. *How to read*

The reading of the material must be:

Orderly. Books should not be read as they come to hand, but according to a pre-arranged plan. Otherwise we expose ourselves to the danger of losing much time. Generally speaking, it will be advisable to begin with books of more recent date, in which we will find the solution of many problems which had been merely referred to in books of earlier date. For the same reason, we should begin with fundamental and more complete books. These books ought to be read with great attention, and at times more than once. Second class works may be read when the research is well advanced; then we shall see their relatively slight worth, and we shall have saved time.

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[1] *Breves adnotationes in cursum Methodologiae generalis*, 46.

Intelligent. This means that, while reading, we distinguish the true from the false, what is doubtful from what is certain, and so on.

Active. Our entire being and faculties must take part in our reading. We must analyse and judge the merit of the work; we have to see what is useful for our purpose, not accepting everything, but carefully making the necessary distinctions, and even at times suspending our judgment.

c. *Taking notes*

In the reading of the sources and subsidiary works one may find: (*a*) bibliographical information; (*b*) entire passages that postulate word-for-word transcription; (*c*) ideas connected with the work in hand that it is necessary or convenient to summarise or condense; (*d*) other ideas which do not have relevance to the present work, but may serve a useful purpose for some other work which we may eventually undertake, or which are of general interest; (*e*) ideas, questions, problems suggested by the reading of the book.

The notes should be taken on cards. While reading it will be convenient to have at hand two or three kinds of cards: (*i*) *Bibliography cards*, for bibliographical entries only, corresponding to the above (*a*); all the bibliographical elements (and, if possible, short references to the value of the work in question) should be given; (*ii*) *Documentary cards* (special), these cards will contain the material of the nature mentioned above under (*b*) (*c*) (*e*); (*iii*) *Documentary cards* (general), destined to contain ideas and notes for future works or matters simply of general interest, corresponding to the above (*d*).

Chapter 12

COLLECTIONS OF SOURCES AND SUBSIDIARY WORKS

Collections of sources

For purposes of scientific work, it is essential to have access to the proper sources.

In this connection, there are two possibilities: (1) The sources are unpublished. In this case we must consult the manuscript sources in archives and libraries. (2) The sources are already published, either separately, or included in a big *collection*.

Many texts are found in such collections; so it is very important for the student to be acquainted with some of the standard editions.

Collections of sources. In these collections we find an enormous number of the *monuments of tradition* regarding ecclesiastical sciences, and the sources for scientific research. We can distinguish four different groups of editions of texts: (I) *Great collections;* (II) *Anthologies and Florilegia;* (III) *Enchiridia;* (IV) *Mixed collections: Texts and Studies.* The *great collections* have been published precisely for the purpose of placing at the disposal of all concerned the fruits of centuries of intellectual activity. *Anthologies* and *Florilegia* are minor collections of texts, composed generally with a view to class use. They are very useful for practice in the method of investigation. Some of them are edited in accordance with all the rules of critical editions and they can be regarded as models. *Enchiridia* are useful for class and reference purposes but not so useful for proper research work. *Mixed collections* are those which include both texts and studies.

BIBLIOGRAPHICAL AIDS

In any research the scholar has to know what has been previously written on the subject of his inquiry. He must know what and where are the sources of his work and what is the bibliography related to his investigation.

Where can one find this bibliography? Reference works, general manuals, and monographs, of which we shall speak later on, can supply important bibliographical data. It is, nevertheless, important to know something about the bibliographical tools, the so-called "bibliographies", that are at the disposal of scholars.

Bibliographies: The immense quantity of books published makes it next to impossible for any individual to be completely up to date regarding the literature available on a subject. Hence the need of *systematic bibliographies.*

"A bibliography is a list of written, printed or otherwise produced records of civilisation. Distinctions are made among the following types: *list,* a brief bibliography, generally with no annotations; *enumerative bibliography,* usually a complete or nearly complete list on a limited subject or aspect of a subject; *descriptive bibliography,* usually an annotated list; *critical bibliography,* an evaluative list; *bio-bibliography,* a list of works by and about an author".[1]

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[1] L. Shores, *Basic Reference Sources* (Chicago 1954) 12.

Bibliographies are either *retrospective*—up to a fixed date—or *current*. By reason of their purpose, some bibliographies are *universal*, not limited by time, place, language or subject: others are *particular* and list the books on a particular *subject*, *country*, *language* or *author*. In all cases, they can be comprehensive, or *selective* and *elective* giving the "best books" on a subject or by an author. Finally, we must add that bibliographical science has, in recent years, made so much progress, and bibliographies have so multiplied, that it has been necessary to make lists of separately published bibliographies themselves. These are called *Bibliographies of Bibliographies* or *Bibliographic Indexes*.

All these lists are prepared by scholars and learned societies to help the work of Documentation in research activity. Book-trade organisations are sponsors of bibliographical lists for the purpose of selling. They issue *Trade Bibliographies.*

PHILOLOGICAL AIDS

A Scientific work supposes, as we already said, a full critical appraisal of the sources. There are books, the aim of which is to help research by the right use of sources. Some may be an aid to linguistic interpretation, others to a quick collection of ideas and synonymous words, etc. It is convenient to be acquainted with these instruments of investigation.

1. Aids to linguistic interpretation

Grammars and dictionaries are aids to linguistic interpretation. We do not mean here dictionaries that merely give the meaning and the correct use of each word. Such dictionaries are certainly necessary, and their possession is supposed both for the living and the classical languages. The student should also know how to consult the big specialised dictionaries relating to the classical languages, and to the evolution of modern languages. Words may have changed their meaning with the passage of time. Likewise, modes and usages of construction may not have remained the same throughout the centuries.

There are some fundamental works that help in the solution of such linguistic problems. There are also dictionaries dealing with particular sciences, such as, for instance, Jurisprudence.

2. For the finding of parallelism

For the finding of parallel passages, of synonymous words of the same author or work, Concordances or Indices are very helpful. In these works, phrases and words are arranged in alphabetical order. There are authors and books of whom complete Indices or Concordances have been made.

3. Quotations, Glossaries

At times, it may be useful to have at hand some collections, quotations, etc. There are several kinds of quotation books; they may be arranged alphabetically by subject, chronologically by author, or alphabetically by author.

4. Auxiliary sciences

Scientific investigation, especially historical research may give rise to different kinds of problems, whose solution is only possible with the help of the so-called "auxiliary sciences". We may mention some of these: Palaeography for the correct reading and transcription of ancient manuscripts; Diplomatique for the proper judgment of ancient documents; Chronology for the right fixation of dates; Epigraphy for the reading of ancient inscriptions; Philology, etc.

WORKS OF REFERENCE

It is often necessary to have a general orientation about a given question or to obtain useful information about some point or to find an accurate description of a problem. To this end, we have the so-called works of reference which propose to give a general synthesis of all sciences or of some sciences in particular and which are meant to be referred to for specific information.

Reference books may be classified by subject and by type. Several types are commonly recognised: dictionaries, encyclopedias, biographical dictionaries, yearbooks, directories, manuals, handbooks. Reference works are being continuously published, as one can see by perusing the list of retrospective reference books, found in such works as WINCHELL, C.M., *Guide to Reference Books* (Chicago, A.L.A., 1957), GARDE, P.K., *Directory of reference works published in Asia:* Unesco Publications (Paris 1956), MUKHERJI, A.K., *Manual of Reference Work* (Calcutta 1957), and the list of current reference works that appears in *Subscription Book Bulletin* (Chicago 1930-quarterly).

Here we shall speak of: (I) Encyclopedias and Dictionaries; (II) Biographical Dictionaries; (III) Manuals, Special works, Monographs.

I. ENCYCLOPEDIAS AND DICTIONARIES

The term "encyclopedia" was originally used not as a title of a book but to denote the complete system of learning—the "circle of knowledge" of the ancients. From the 15th century onwards, the word was applied to every systematic summary, either of the whole extent of man's knowledge or of a particular department of it. And a work offering such a systematic and complete summary was termed an 'encyclopedia'.

From this one can guess that today's encyclopedias have a long past. The works of Plato and Aristotle, as well as Pliny's *Natural History* were considered as encyclopedic works. With greater accuracy some works by scholars of the Middle Ages, such as Vincent of Beauvais, O.P., the African Capella and especially the collections of Alsted, Bayle and Moreri in the 17th century are pioneers of the modern encyclopedia. The modern encyclopedia properly so-called starts in the eighteenth century.

Different kinds of encyclopedias. By reason of their contents, some encyclopedias are *universal*—they profess to give a complete account of man's knowledge; others are *particular*—they treat of matter pertaining to one or other branch of human knowledge. Until the 16th century, it was not unusual for a man to write a treatise in which he intended to include all human knowledge. But in later centuries, due to the increasing multiplicity of sciences, we have seen the publication of particular encyclopedias, some of them very specialised indeed.

Some encyclopedias are *systematic*, in which the matter is classified and treated in a logical and organic order, whereas others are *alphabetical*, in which the matter is divided into articles arranged in alphabetical order according to "key words". In the beginning, encyclopedias were of the systematic type. The first alphabetical encyclopedia is supposed to have been the *Bibliotheca universale sacroprofana*, published in 1701 by Vincenzo Maria Coronelli, O.F.M.

The change from systematic to alphabetical implied in a way a change in the character of the encyclopedia itself. The encyclopedic compilation became not merely an exposition of the systems of human knowledge, but a work of reference in the strict sense—one, that is, for occasional use. On account of the alphabetical arrangement, these encyclopedias are at times called "encyclopedic dictionaries" or simply "dictionaries". Obviously, they should not be identified with "linguistic dictionaries" which deal with words rather than things.

We must also distinguish between two basic methods of encyclopedia construction. One type is organised into long articles, and the small topics within the general subjects must be located by using the index. An example is the *Encyclopedia Britannica*, which has only 41,000 separate articles, but its index, in the 24th volume, reveals treatment of some 550,000 subjects. The second type contains many short articles, and therefore more topics. Similar to this, is the distinction between encyclopedia for *consultation*—for quick reference—in which each problem is treated very briefly; and *monograph-type* encyclopedias, which give real monographs on different subjects.

Value of encyclopedias. An encyclopedia is a subsidiary tool for scientific work in the sense that one can obtain from it a succinct idea of a system, or the essential data of a historical problem, the main features of an author or fact, the present state of a science, a bibliography concerning a problem, etc. The value and usefulness of encyclopedias depend on the care with which the vocabulary is chosen, which has to be apt and complete, and on the accuracy and modernity of the information regarding the subject an bibliography. This is not possible unless the editorial staff of these encyclopedias is made up of many and very able men. In fact, nowadays, encyclopedias are the work of hundreds of specialists in the different branches of human knowledge.

Encyclopedias, on the other hand, have their limitations. The first and most important is that they may go out of date unless they are supplemented and revised periodically. Secondly, some of the encyclopedias suffer from an ideological or national bias; they show lack of scholarship or of understanding in the treatment of some subjects or some countries. In fact it is difficult to find an encyclopedia which is best in all fields; in this sense, different encyclopedias supplement each other.

II. BIOGRAPHICAL DICTIONARIES

Among the most useful reference tools are the biographical dictionaries, which give the names of persons of a particular country, language, science, or the names of places, institutions, etc.

These biographical sources can be (1) *universal*, which include the notable persons of all times and all places;

(2) *particular*, which restrict their field to notable persons of one nation, or to specialists of a science, etc.; (3) *retrospective*, which are limited to notable persons now dead; and (4) *current*, which deal with a wide range of questions on living persons. Current biographical sources are of the widest variety; some are carefully prepared and the persons contained in them well chosen, while others are brought out by unscrupulous publishers, and exploit individual vanity.

Besides these specific groups of biographical reference sources, every type of reference book, especially encyclopedias and dictionaries, have either separate biographical lists or incorporate names of persons in the main vocabulary. Still, it is useful always to refer to the specific biographical dictionaries.

III. MANUALS, SPECIAL WORKS, MONOGRAPHS

A. Manuals

A great source of information on a given subject are the scientific and historical manuals, prepared not for the purpose of serving as didactic textbooks for class, but to offer an integral view of a particular science. Works which are particularly useful are those which give the historical development of a science, especially if they also add a bibliography.

B. Special Works; Monographs

Special works expound with scientific competence a notable part of a science, without treating of it in all its aspects as do the scientific manuals. Monographs, on

the other hand, as the name indicates, are specialised studies of a concrete and particular problem.

Evidently, if a monograph exists on a given subject, that is the best work of consultation on that matter. And if no monograph, but a special work exists on the topic, the special work should be preferred to a general manual.

Chapter 13

INITIATION EXERCISES IN SCIENTIFIC WORK

Scientific works may be divided into two classes: simple and advanced. The latter usually results in a monograph. In both, the rules of methodology are to be observed.

Some of the simple works are carried out in Seminaries and Universities, not with a view to offering a work of an original nature, but to providing the student with training, through practice, for advanced work. These initiation exercises are called *Seminars*, *Pro-Seminars*, *Project-Classes*, *Practical exercises*, *Exercitationes*, *Cours pratique*, etc.

The work in seminars may take the form of: (1) an examination and discussion of some problems studied in the theoretic course: a type of "study circle"; (2) academic discussions after the manner of medieval scholastic "disputationes"; (3) practical directives aimed at a scientific work; (4) exercises during sessions in common; (5) presentation and critical discussion of the students' personal work. The last three have as immediate object the initiation of the students to scientific work.[1]

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[1] F. Van Steen Berghen, *Directives pour la Confection d'une Monographie Scientifique*, 9.

Origin of scientific seminars

Already in the Middle Ages and Renaissance period, different exercises were conducted in theological schools, with the object of giving the students practice in the use of the scientific knowledge acquired in class, and promoting personal studies. Thus, for instance, there were the *Disputationes scholasticae*, in which was practised the art of discussing logically, and the *Academies*, which were meetings of select students under the direction of a professor to study a subject more profoundly.

The Ratio Studiorum refers explicitly to the practical training of students of philosophy for the office of teachers. In fact, as early as 1579, we find Diego de Avellaneda establishing a school, that was called *Seminarium*, in Palencia (Spain). In this school, as in others that followed in other countries, students were introduced to the scientific method.

Some of the important schools founded with the same purpose of scientific training were: the *Collegium* established at the University of Halle in 1697, the *Seminarium philologicum* in Jena in 1737 by Gesner, and especially the *Seminarium* founded by F.A. Wolf in 1787 in Halle and in 1810 in Berlin. All these institutions were mainly intended for the training of teachers.

It was at the beginning of the 19th century that the modern method of fostering personal research and a scientific mentality among students gained popularity. The means used to give this training were private courses, interpretation of texts and practical exercises. The method first became popular in German Universities, especially in the fields of philology and history: in these two field, German Universities perfected the method of Wolf. When, due to positivistic philosophy, different branches of sciences came into existence, the idea of creating a separate *Seminarium* for each science gained ground in Universities. The purpose of it was to combine theory with practice, instruction with exercises of research.[1]

The reason for the existence and development of the Seminar is that it is realised that classes alone do not suffice for the training of the student. Even in the best organised classes it is felt that the student is reduced to some passivity, at least, owing to the too academic character of class. The Seminar is intended to supplement the receptive attitude by the personal activity of the student.

The essential characteristic of a Seminar is that the student works under the direction of a professor. While in class the student tries to assimilate by means of attention and penetration what is given to him by others, in the Seminar he endeavours to discover something for himself. Likewise it is the aim of a Seminar to initiate the student into the scientific method, and sometimes even in the production of something original, fostering research and development of science by the combined efforts of students and professors. In fact, many Universities have in their well-equipped Seminars the best centres of scientific research.

In any case, one of the aims of the Seminar is to go deeper into the questions that have been explained in class: to arouse the latent energies of students; to apply, through practical exercises, oral as well as written, the theoretical rules of methodology and thus to prepare students for personal work.

Exercises of the Pro-Seminar

As the word itself indicates, the "Pro-Seminar" is a kind of introduction to the work of the "Seminar" proper. It is, so to say, a course of *general initiation*, of *practical methodology*, in which the student is trained to embark on research work. The practical exercises of the Pro-Seminar are intended to give one the knowledge of how to find sources and subsidiary works, how to make use of these scientific tools, and to acquire the mental operations needed for a scientific work.

This knowledge must be practical. Just as a craftsman is taught the nature of his tools and how to use them, so in the "Pro-Seminar" the student is taught what are the tools for scientific work and how to use them intelligently.

The practical exercises may also include the manner of quoting and citing books and periodicals according to the rules commonly accepted, the way of taking notes and arranging bibliographical and documentary cards, the manner of using a library intelligently, the external preparation of scientific works, etc.

Exercises of Seminar

The practical exercises of a Seminar are the first essays at a personal and scientific work. They may vary according to the sciences and the ability of the student. Thus, for instance, in theological Faculties, the exercises will be different according as the student wishes to specialise in theology or intends to dedicate himself to the pastoral ministry.

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[1] Cf. J. DE GHELLINCK, *Les Exercises pratiques du "Seminaire" en Theologie*, 13-45.

In any case, the director of these exercises will see to it that the students learn to read the sources correctly, to be objective while dealing with the opinion of others, moderate in proposing their own, strict in scientific method, and conscientious, that is, fond of scientific probity.

As a more simple exercise, one can mention the so-called "project-class" in which each student is given a particular point of a question which he studies, and then, under the direction of the professor, expounds in writing. Likewise some exercises could consist in the study of a problem or of a book, the results of the study being a symposium of essays. So also, what in natural sciences is called the "rediscovery method", that is, the revision of a discovery, a law or a theory, following step by step the way that led to the discovery or the formulation of such a law or theory; in theology, it could consist in formulating a thesis, following the steps or the method, which were followed by the authors who first formulated such a thesis.

Some of the exercises may consist in real scientific research, done commonly by the professor and a group of students. Each student proposes to study one or other point of the problem, bringing his findings to the common meeting. This method offers excellent advantages from the pedagogical point of view.

With regard to the form, the practical exercises can be *oral,* such as scientific discussions, reading and interpretation of texts, book reviews, etc. These are very useful but not sufficient. It is also necessary to do *written* exercises, which force the student to study the subject more deeply, and to follow more accurately the rules of methodology. Such works as synopsis, annotated bibliography, and essays belong to this category. They give to the student opportunity of doing work of a personal nature, and open the way for him to produce a scientific monograph.

In the following chapters we give the rules that must be observed in such works.

Chapter 14

SIMPLE SCIENTIFIC WORKS

SIMPLE SCIENTIFIC WORKS may be either oral or written.

1. Oral

Scientific discussions, exercises of research in common, reading and interpretations of texts, bibliographical chronicle, and lecture or conference are the most common simple oral scientific works.

a. *Scientific discussion*

Scientific discussions are useful as a human exchange of ideas and as a means of broadening one's mental horizon and adding to one's knowledge. Scientific discussion consists in examining a problem from every angle. All who join this kind of discussion must be given an opportunity to propound their ideas, difficulties or objections, as well as their own view of the conclusions arrived at through the discussion. If well conducted, such discussions are, in the practical exercises of a Seminar, a means of investigating and expounding truth methodically, and, later, in real discussion, a means of acquiring a more complete view of a problem or doctrine.

The matter for these discussions is manifold: a class subject, a theory read in books, a view on a conference or a book, a doctrine of a religious or political system, etc.

Procedure. The standard procedure in a discussion is, more or less, as follows:

All those who join in the discussion, are to study the chosen subject. A careful and detailed study and a written exposition are expected from one or several who are selected beforehand. This exposition is to be the basis of discussion.

When the paper has been read, the president proposes for discussion its different aspects. Thus, the discussion may centre on the external *form* of the paper: arrangement of the subject, manner of reasoning; or on its *content:* the force of the arguments, the pros and cons. Likewise the views of other authors may be brought up for examination.

In order that the discussion may be fruitful, the relator must propose clearly and in precise terms the problem under consideration. Those who take part in it are to set forth their views without prejudice or passion, always having truth as their aim, and allowing others to expound their views with equal freedom. Self-control, fairness of mind, politeness in letting others speak and not interrupting the relator, moderation in the use of language and honesty in keeping to the essential points of the discussion are required.

The president, on whom largely depends the success of the discussion, must guide it with prudence, without dominating it himself. He will put questions, propose difficulties, and show new aspects of the problem, which have not been mentioned by others. He will solve difficulties and direct interventions.

Well conducted, a discussion, besides fostering toleration and mutual understanding, is an excellent means for a thorough study of a question.

b. *Exercises of research in common*

When the matter permits, its study may be carried on in several meetings. Each member of the group takes upon himself the task of studying in detail one of the points into which the matter may be divided, and of bringing his own findings to the common meetings for discussion.

The procedure to be followed in these discussions is as explained before.

Study-circle. Somewhat similar in procedure to the foregoing—though its aim is quite different—is the method of study called, "Study-circle".

A study-circle is the meeting at regular intervals of a group of students for the study and discussion of some topics. Every member takes an active part. It is one of the methods more widely spread during the last decades as a means of acquiring an accurate and personal knowledge of religious and social truths. In practice, it has been introduced also as a means of character-building, of giving personal training.

Study-circle, as its name indicates, stands for voluntary study; it gives the members the opportunity to learn for themselves, by being active and not merely passive listeners. It means, therefore, combined work: every member is active and does the teaching to himself and to others. Points are raised, examined, discussed, passed or rejected by every member.

A study-circle, besides, requires that the group be small. Personal and combined work is possible only when the members are not too numerous.

Procedure. The procedure is similar to that of the "Discussion". We have a president who presides over the meetings and directs the study, and a secretary, who keeps a short account of the proceedings. Everything should be done simply, sincerely, earnestly. Though the work of the meeting is largely carried on by discussion, this should be constructive and well-controlled discussion.

There are different methods of making the study meeting really interesting and successful. We may mention here the "essay method"—a member of the group prepares a subject of common interest—, the "textbook method" or "working-paper method"—a book, a pamphlet or a handbill with appropriate text and questions is selected as a basic text for study—, the "inquiry method"—a personal inquiry, either the so called "Gospel inquiry", or "social inquiry" through the "See, Judge, Act" procedure, is instituted to grasp the doctrine and its application to life—, the "debate method"—the discussion is carried on by opposite parties—, the "conversation method"—the discussion is started with a question which every member has to answer—, the "planned Forum method", etc.

In every case, the success of the "study-circle" does not primarily depend on the methods of discussion, but upon the personal study and co-operative spirit of each member and upon the preparation by the president and the member who expounds in each meeting the point of study. Each member, therefore, has the responsibility of making the meeting successful. Upon the president falls the task of creating that co-operation, of choosing well the subject-matter, of suggesting points for discussion. At the same time, his duty is only to direct the study, not to lecture. What we have said about his role in "Scientific Discussion" holds true also here.

c. *Reading and interpretation of texts*

As a scientific exercise it is customary in Universities to read and interpret critically the writings of well-known authors. Besides providing an opportunity for familiarising oneself with great authors, this exercise is a means of learning the application of the laws of critical interpretation. This exercise consists in investigating the mind of an author, by examining the exact meaning of words used by the author in each of the passages under review. To this end, all the philological and historical means of research, learnt in methodology, are brought into service.

Procedure. A text, generally of a great author, is chosen. This text should be such as to lend itself to critical reading. When many students take part in the exercise, a copy of a critical edition of the texts should be supplied to each student or at least to groups of two.

Then, each student is asked to study a part of the text. First of all, he is required to translate it into the vernacular in case the original is written in another language: this helps accuracy. Next, the student has to inquire into the following points: authenticity of the text, its ingtegrity and faithful transmission, discrepancies between codices,

the literal meaning of words and the explanation of words of doubtful meaning, and the exact sense of the text. He will also check the quotations from others, and note the sources which the author may have used, as also the difficulties which are found.

To resolve doubts regarding the meaning of words or sentences, recourse will be had to other passages in which the author deals with the same or similar matter or uses the same words. While studying sources, the student may note whether the author agrees fully with his sources or not.

Finally, other problems to which the reading of the text may give rise are studied: the philosophical ideas of the author, his historical and geographical conceptions, etc., as circumstances may suggest.

At each meeting the listeners who also have studied the text make their observations, put their difficulties or suggest corrections regarding interpretation, etc.

N.B. Translations. Translations of scientific books, besides being a means of diffusing knowledge if the books are works of real merit, help also in the formation of the translator himself.

Translations are good when they evoke the same thoughts and emotions as the original. To reach that perfection, the translator, besides having a knowledge of both languages in a remarkable degree, must succeed in making a correct and real interpretation of the original and in expressing it in a way proper to the language into which it is translated. In the translation, one should pay special attention to precision in the use of technical terms; the translation should not be literal to a degree that makes its reading stilted or unintelligible; on the other hand, one should not for the sake of literary perfection depart from the original.

The translator is not expected to improve on the original, or to put clearly what the author left obscure. The translator, however, can, and at times should, supplement the bibliography, verify the citations, and make other additions of the kind, always indicating that the additions are his own.

d. *Bibliographical chronicle*

The bibliographical chronicle has as object to give an account of books that are published, and of works that appear in periodicals about a particular subject.

This work is at times done in writing. Sometimes it is the professor of a subject who collects all that appears in print regarding it; or a librarian takes note of what is published, or bought for the library; again the work may be entrusted to a group of students, who divide among themselves the different fields of science in order to present a bibliography of the branch assigned. In this last case, the advantages are mainly two: (1) as the work is divided, it is easy for all to be in touch with up-to-date literary production in different branches of science, without the need of their spending time reading everything themselves; (2) this exercise helps one to remember what one reads, and to expound with accuracy the mind of an author.

Procedure. The bibliographical chronicle must give the list of entries (all elements of a complete bibliographical description as will be indicated later on) and a resume of their contents.

When possible, one should give one's opinion regarding the value of the publication, which certainly will make the exercise more useful. Advantages are greater when at the same time the books and periodicals where the works are found, are presented; intuitive knowledge is more easily fixed in the memory.

c. *Lecture or conference*

We have already dealt with the norms that govern the planning and delivery of speeches in chapter eight. Since it is essentially the same norms that govern the conferences, it is unnecessary to dwell on them here.

2. Written

Simple written scientific works can be reduced to four classes: synopsis, book review, bibliographical bulletin, note or essay.

a. *Synopsis*

A synopsis is a clear and brief summary of some matter treated of in more detail in a scientific work. It seeks to communicate the fruits of scientific research done by others.

Its utility resides in the fact that it is a means of information for non-specialists and for people who have not access to the work in question. Synopsis are also useful for those who make them, as they accustom them to read with attention in order to grasp exactly what an author says, and oblige them to express in an accurate manner the concepts of others.

Qualities of a synopsis. The first and essential quality of a synopsis is *objectivity.* One has to expound with objectivity the study as it is developed by the author, and precisely from his own point of view. Readers of the synopsis must be in a position to know exactly what are the essential contents of the work synopsised. One commits faults against objectivity, not only by attributing to the author ideas which are not his, but also, by falsifying his thought by silence or omissions.

Practical norms: i. If it is a question of a scientific work, attention must be paid to the end the author has in view, which will be known from the introduction or preface. So also attention is to be given to the internal arrangement of the subject, which is known not merely by going through the Index, but by following attentively the line of argument. Finally the conclusions of the author should be taken into account.

ii. As a general rule, one may say that one reading alone will not be sufficient for the writing of a synopsis. The first reading will serve only to note the most important things; a second reading will serve to examine things in greater detail.

iii. The synopsis should leave aside accidental things, and underline what is essential. It must faithfully express the substance and the doctrine of the work. At times, in the interest of greater clarity, one may not follow the order proposed by the author, but this should be indicated so that the readers may not be misled.

b. *Book review*

A book review introduces a book recently published, briefly indicates its contents, tells its importance, and gives a terse objective evaluation.

It may take the form of a *brief* presentation and evaluation of the book; that is most common in magazines to keep readers informed of current literature. Or it may take the form of a *lengthy* critical study, which may be useful for some works.

The main object of a book review is to serve the interests of truth and science by evaluating after a serious analysis the merits or demerits of a book. A review well done is a guide to truth, for those who cannot judge a publication for themselves place their trust in the opinion of the reviewer. If, on the other hand, the review is not objective, it may mislead people or co-operate in propagating error among them.

The making of a good book review presupposes in the reviewer:

i. *Knowledge of the book.* It is not enough to read one or other chapter of the book. He should go carefully through the whole book, paying special attention to the Preface or Introduction, in which the author expresses his intention in writing the book, and the particular aspects from which he views the subject in hand.

ii. *Critical sense.* The reviewer has to possess a critical sense to be able to distinguish wheat from chaff, the essential from the accidental. It is not unfrequent to find people who give an unfavourable judgment of a book of real worth because of some accidental defects, or who seem to lack the sense to appreciate real values.

iii. *Politeness.* If politeness is to be observed everywhere, the more so in public, and especially in public writing. Hence the reviewer must show regard to the author, and acknowledge his intellectual and moral qualities. When there is need, the doctrine alone has to be criticised, never the person of the author. The manner in which a critical review is made should be dignified and serious.

Qualities of a critical review

i. *Truth.* What the reviewer says should be in accordance with the truth, especially when adverse criticism is passed. Hence the need for reading carefully, particularly those passages that appear to call for correction.

ii. *Justice.* The reviewer may speak the truth, and yet fail in justice, for instance, if he speaks only of what is bad in the book. Both what is praiseworthy as well as what is less good should be indicated.

iii. *Clarity.* The reader of the review must be in a position to form a correct idea of the book in question. So clarity is needed about the content as well as about the value of the book.

iv. *Benevolence.* Saving the rights of truth and justice, the reviewer should show benevolence to the author. A hard criticism, however, may be needed at times, if the author's evil intentions are clear, and the book may do positive harm.

v. *Usefulness.* A good review should be able to help both the author and the reader. The author should receive encouragement from the acknowledgement of his merits, and suggestions to correct his mistakes in other books or further editions. The reader should know the substance of the book from the review.

Practical norms

The following may be useful

(1) Begin by reading the book attentively.

(2) Take notes on separate sheets of paper, regarding what is good and what is less, or not good in the book. You may classify your remarks from the point of view of content, style, procedure, exposition, arguments, conclusions.

(3) Write the review, taking care that you offer in it three things:

i. *Description* or *presentation* of the book: giving information about the author (name, surname, qualifications if necessary), title (also the sub-title, if any) of the book, the name of the collection (if the work is part of a collection), the edition (if it is not the first), the place and year of publication, the name of the publishers. Then, the size of the book, the number of pages, and the selling price. All these items, except the last three, are usually found on the title page of the book.

ii. *Exposition*: giving a summary of the content, of the arguments, of the method followed, of the conclusions reached in the book.

iii. *Critical evaluation:* passing judgment of the content, the method utilised, the style, the importance of the book. Such an evaluation will tell us, for example, whether the book is good and attractive, the conclusions well drawn, the style suited to the subject, the treatment of the matter appropriate and balanced; whether the character of the book is informative, whether it adds something new to the science, etc.

Appreciation of the book is done usually in general terms. A book may not demand adverse criticism; should such criticism be called for, the reviewer may indicate the true doctrine or point of view in order to make the criticism positive and constructive. It may be convenient at times to assist the author by pointing out sources or writers unknown to him, by enlightening him on some point, by indicating important printing errors (not small ones), especially if they change the sense of phrases. In most cases, the book will demand a congratulation to the author, and that the reviewer should heartily convey to him.

c. *Bibliographical bulletin*

A *bibliographical bulletin* reviews systematically whatever—books and articles in periodicals—is published on a given subject or science. Many magazines give these bulletins. They are very useful in ordr to follow scientific progress in the different fields of science.

d. *Note and essay*

A *note* is a brief communication—and an *essay* a short dissertation—on a particular point or problem. Their purpose may be manifold. It may be to give a new interpretation to a problem by bringing in some elements which the writer regards as new. Or it may be merely to point out an error, or to defend an opinion that has been attacked, or to answer a question or doubt that has been raised.

In every case, notes and essays of this nature must be brief, clear, and, if the subject is controversial, prudent and modest.

Chapter 15

ADVANCED SCIENTIFIC WORK— CHOICE OF A SUBJECT

By advanced scientific work, as opposed to simple scientific work, we mean research work on a topic, making an original contribution towards scientific progress.

Stages in research work. Research work has several stages, from the choice of topic to the publication of the article or book that gives the final result of the work done.

The initial step obviously is (I) the *choice of a subject* for research. Then, comes (II) the *elaboration* on the topic chosen: this involves the following stages: (i) *Preliminary work.* This consists in acquiring a general knowledge of the question (*orientation*), as well as in finding the sources and subsidiary works (*heuristics*). (ii) *Appraisal of the sources* and critical reading of works closely connected with the matter in hand (*criticism*). This is the hard core of any research work and it may include examination of the authenticity, integrity and credibility of the sources, together with an analysis and interpretation of the same. (iii) *Elaboration* of the material until a final synthesis and final conclusions are reached (*synthesis*). (iv) *Presentation* of the results achieved (*exposition*).

Some of the activity which we have called preliminary, continues in a manner up to the end—just as criticism and personal elaboration have to be exercised from the very beginning, that is, even in the preliminary work. We distinguish the different stages according to their predominant characteristics.

In this and the following chapters we shall treat of these different stages of scientific research.

THE CHOICE OF A SUBJECT

The subject of research should be chosen from among those matters which arouse greater interest in the student, pertaining to what we might call his profession, a subject, which can be studied with the means at his disposal. This leads us to speak firstly of the need of determining our field of studies with a view to specialisation, and secondly of the qualities which in this limited field the chosen theme must have.

1. The field of specialised scientific research

One of the consequences of the development of sciences in the last centuries is this: to attain proper scientific results in research, one has to limit oneself to some special branch of science, dedicating to it one's life.

In olden times, a science could be contained in an encyclopedia, and there have been geniuses who were perfectly at home in all departments and wrote "de omni re scibili". At one time, philosophy was the universal science. In the course of centuries, several of its parts were separated and became independent sciences: mathematics with Euclid, mechanics with Archimedes, astronomy

with Copernicus in the 16th century, physics with Galileo in the 17th, chemistry with Lavoisier in the 18th, biology with Biechat and Bernard in the first half of the 19th, and a little later sociology with August Comte. All these different sciences, in their turn, have been divided and subdivided almost microscopically into branches and sub-branches.[1]

Dangers of specialisation

True, specialisation has its dangers. For example, as a specialist dedicates himself to analytical work, he may easily tend to depreciate the great synthesis, and thus deprive himself of the benefits of the harmonious vision of the sciences. There is also a danger of a onesided view of things, one sort of argument only being valued—historical, mathematical or metaphysical—, and all being judged from the viewpoint of one's own specialisation: this happens to many "scientists" in relation to philosophical and theological arguments. Likewise, there is the danger that a man learned in one subject, which is perhaps secondary, remains ignorant in matters which are fundamental for life.

Necessity of specialisation

In spite of the dangers to which excessive specialisation exposes a student, specialisation is a necessity nowadays. The years of a man's life and his intellect being limited, the progress of science can be obtained only if men consecrate their eneriges to the study of one of its branches. More than general works, it is the specialised monographs that advance human knowledge.

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[1] LASSO DE LA VEGA, *Como se hace una tesis doctoral*, 135.

This holds good not only in respect of the physical sciences but of all. The mass of data, historical and positive, the advance of psychological studies, archeological and philological findings, etc., have made the field of research so vast that it is well nigh impossible for one and the same man to do research work in all these sciences. Hence the need to determine the field of one's work.

2. Defining the field of specialisation

Choosing the field for specialisation depends on the personal vocation of the student, that is, upon his inclinations and aptitude, and upon the concrete circumstances in which he finds himself.

a. *Personal scientific vocation*

Research work proceeds quite naturally when its object agrees with the personal tendencies and specific abilities of the student. On the contrary, the student will lose much time and energy when the subject is not in accordance with them. We may call this the personal vocation for a kind of scientific work. This vocation comprises the natural inclination of the student and his aptitude.

Inclination. A student works harder and in right earnest when he likes the work in hand. On the contrary, if he dislikes a work, he will never do it very fruitfully, and at times he may even give it up half way. The history of science is full of instances of geniuses who looked quite

mediocre as long as they applied themselves to works that were not in tune with their inclinations, and who attained eminence as soon as they began to work on matters to which they felt a natural inclination.

Aptitude. In the choice of one's scientific vocation, account has to be taken not only of natural inclination, but also of other factors, the most important of which is the aptitude or ability of the student. It is a fact that at times natural inclination and aptitude do not go together. Therefore it would be a mistake to allow oneself to be guided, in the choice of the field of work, only by natural inclination, without seeing whether one has all the natural and acquired qualities which are necessary in that field.

Here are some elements from which to judge the *aptitude* of a student: *physical strength*, its necessity varies according to different fields of research; *psychological dispositions*, which determine the greater or lesser depth, quickness, steadiness and perseverance that a student brings to his work; *natural propensity* to use one or other of the different scientific methods—positive, inductive, intuitive; *memory*, which is required in some works more than in others, and finally the *technical and intellectual preparation*, such as the languages one knows, etc.

The need of discovering the students' intellectual vocation has given rise in several countries to the organisation of what are called services (Bureau) for professional guidance. They are based upon the principle formulated by Goethe: "Not all walks of life are for all travellers", and aim at realising the dictum: "The right man in the right place".

b. *Circumstances of the student's life*

Circumstances of time, place and occupation in which the student finds himself are factors which, when foreseeable, have to be considered when deciding the field of work. They may limit the range of subjects one may desire to choose for study.

The time at one's disposal, for instance, the books, libraries and tools of work that will be available need to be taken into account. Thus, one has to give up the idea of doing research work in matters the documentation of which is not within one's reach.

3. Choice of theme

The orientation that one wishes to give to one's intellectual life, will be a generic guide for the choice of a theme. Then, the theme must have the following characteristics:

— It must be *proportionate* to the ability of the student, and within the means of research he has at the time.

— It must be *clear* and *well defined.* It should not be too vast, or it will not allow of deep treatment.

— It must be of some *importance*, or involve a problem worth discussing. As far as possible, the theme must be such as will allow the student working on it to contribute towards the progress of science, because of its importance or originality. "One ought to make the choice of themes without running away from the realities of the world, but, on the contrary, keeping in view the just needs, ideals and aspirations of mankind."[1]

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[1] Lasso De La Vega, *Como se hace una tesis doctoral*, 63.

— It should be *formative*, as far as possible if it is a question of the first research work by a graduate student. That is, it should open up new and wide horizons to the student, or put him into contact with great authors or give him an occasion to study scientific currents or to apply the different scientific methods, etc.

Practical means of choosing a subject

There are many paths one can follow in the search for a subject. The curriculum of one's studies and one's reading are naturally the first source of inspiration for the selection of a theme. If a student follows his studies with interest and love, he will have ample opportunity to gather data, notes, bibliography on problems not yet satisfactorily solved, views or solutions that occur to him, themes that the professors point out as apt for research work.

Another source of inspiration are monographs and specialised journals. Good monographs show the existence of problems still to be studied and to which the writer may have made only a passing reference. Contact with journals is very helpful for they suggest themes and problems, and, often, indicate the bibliography and procedure.

Likewise, Abstracts, Reports from learned academies, Universities and centres of research, lists of subjects chosen for doctoral theses in Universities, are a great source of inspiration in choosing a topic for investigation.

Chapter 16

ADVANCED SCIENTIFIC WORK— ORIENTATION, HEURITSICS

THE PRELIMINARY STAGE in scientific research consists in getting: (1) a general orientation in the matter to which the chosen theme belongs, and (2) a knowledge and classification of the sources and bibliography related to it. These two operations are done simultaneously. We shall, however, give some directions regarding each separately.

1. General orientation in the matter

Definite choice of a topic having been made, the student has to acquire the most perfect knowledge possible of the present status of the science and of the scholarly investigation on the subject in question.

This general study will make further research intelligent, helping the student to pay attention to what is important and essential and sparing him the painful disappointment of considering as personal discoveries what is already known, and of neglecting what really mattered.

Aids for general orientation

The student will be able to get a general orientation in the subject by consulting *works of reference:* encyclopedias dictionaries, scientific manuals, monographs.

Encyclopedias and great dictionaries will provide him with the first general orientation. Scientific manuals will place the theme in the right perspective within the science to which it belongs. Monographs, if any, will show the present state of investigation on the subject in hand.

The procedure is as follows:

a) If the student needs full orientation in the subject, he should, as a rule, first consult the specialised encyclopedias and dictionaries, which will give the relevant bibliographical reference to scientific manuals that treat of the matter. These manuals, in their turn, will supply information regarding monographs which may exist on the subject.

b) If the student knows of any monograph on the topic in hand, or about some subject closely connected with the same, he should, as a rule, read the monograph first, for this reading will show him to what extent the field has been covered and what are the possible prospects for investigation. Nevertheless, the reading of scientific manuals and even encyclopedias may still be necessary so that he may not lose sight of the global view of the science in question.

2. Knowledge of the bibliography on the subject

Parallel to the work of getting a general orientation on the subject is that of looking up its bibliography, to get well informed about the sources and other works which one has to study for the solution of the problem.

This bibliographical work comprises two things: (*a*) the material gathering of titles and authors, and (*b*) their critical classification.

Chapter 17

ADVANCED SCIENTIFIC WORK— APPRAISAL OF SOURCES [1]

APPRAISAL OF THE NATURE and value of sources, or criticism of sources, involves the examination of three things: (A) Origin of sources—their authenticity, integrity, derivation and dependance; (B) Interpretation of sources—hermeneutics; and (C) Authority of the sources—the probative or evidential value of their content.

The critical examination of the origin of sources is called *external criticism,* while the examination of their meaning and authority is termed *internal criticism.* The terminology comes from the historical sciences and was first introduced by Bernhein.

Some writers, however, speak of the application of *internal evidence—internal criteria:* content, style, etc.—as *internal criticism,* and of the applicaton of *external evidence—external criteria:* extrinsic testimony, etc—as *external criticism.*

Those three operations are so connected amongt hemselves, that it is only after examining the origin of the sources, that we may pass on to determine their exact meaning, and finally to utilise them for the solution of our problem. This triple work is either done or presupposed in every scientific research work, whatever be the nature of the subject: dogmatic, historical, juridical, psychological or sociological. We say that it is done or presupposed for often, in fact, the authenticity of the sources is already established by a competent scholar—this in itself is a scientific contribution. At times, however, especially when the work comprises the editing of unpublished documents, one will have to do the external criticism oneself. Hence, the importance of being acquainted with *scientific criticism,* that is, with those principles and directions for establishing the genuineness and integrity of sources, for determining their meaning and fixing their value for the research in hand.

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[1] Cf. GARRAGHAN, *A Guide to Historical Method,* 143-338; GARCIA VILLADA, *Methdologiay critica historica,* 65-90; FONCK, *Il metododel lavoro scientifico,* 205-233; BRELEK, *Methodologia historico-iuridica,* 72-80, 155-166.

A. ORIGIN OF SOURCES

The inquiry into the origin of sources involves critical examination of their (1) *authenticity,* or *genuineness,* namely their author (authorship), their time (datation) and place (location) of composition; (2) *integrity,* and (3) *derivation and dependence* with regard to content.

Investigation of the authenticity and derivation of sources is called at times *higher criticism,* and that of their integrity, *lower* or *textual criticism.* Examination of their derivation is termed also *source-analysis.*

1. Authenticity of sources

A source is *authentic* or *genuine,* when its reputed origin is the real one: otherwise it is called *Spurious* or *false* apocryphal, supposititious, counterfeit). The authenticity of a source is doubtful, when its origin can be determined only with probability. The real author, therefore, of an authentic source is the one to whom it is attributed, or in the case of anonymous works, some unknown author of the period to which it is ascribed.

At times, the term *authenticity*, is used to express the idea of *credibility* of a source, credibility which presupposes genuineness and integrity. As, in some cases, a spurious source can be reliable as a historical witness, we prefer to use the term authenticity in the sense of genuineness.

Falsification in a source's authorship may be complete, or partial. The latter is interpolation properly so called, that is, deliberate insertion of extraneous matter into a genuine source. Falsification and interpolation, frequent in all departments of life, have always existed in respect of sources, literary, documentary, historical, written as well as oral. All branches of science have catalogues of spurious works: texts ascribed to wrong authors, falsified documents, interpolations in narratives, etc. The apocryphal books, the pseudo-collections, the false decretals, hagiographical legends, famous spurious sayings, are classical examples.

A falsification may have been involuntary, due to unconscious error, ignorance, or false interpretation. Interpolation also may have been done in good faith: a copyist, when for example he omits illegible words, may have desired to perfect the text, supplementing the author's words. But, frequently in the past, falsifications were due to conscious fraud, and interpolations were done in bad faith. Among the different motives which promote falsifications, complete or partial, are: a desire to defend one's ideas with a recognised authority, notoriety-seeking, pecuniary gain, a mania for the marvellous (in hagiographical legends), national pride, party interest, etc.

The criteria of authenticity. The criteria for determining the authorship of sources, for dating and localising them, are *external* to the source itself or *internal.* The application of both criteria, especially internal, requires great caution and skill. External criteria offer the most valuable evidence, but the use of internal criteria is legitimate, and, at times, is the only method of solving problems of authenticity.

Authorship

External criteria. As a general rule, a manuscript or a book bears the name of its author. That is the first criterion by which we attribute the work to that author, unless there are reasons to the contrary. For works published in the lifetime of the reputed author, or not long after his death, that is a safe criterion. For works of a remote age, that bear a definite name, and that remained unpublished for a long time, the testimony of the reputed author claiming the work as his own, or reliable contemporary or quasi contemporary authorities are valid criteria for authenticity. In the latter case, however, care must be taken to verify that the work in question is the original, and not a fabrication with the same name and under the same title.

When the extrinsic testimony is an accumulation of witnesses, independent of each other, and belonging to different countries, etc., the evidence grows in probative value. An example of this is the proof of the authenticity of the Gospels.

The application of external criteria is similarly the safest way of determining the authorship of an anonymous, pseudo-anonymous or clearly spurious work. One may first try the collections of "Incipits", "Formulas", and other philological and bibliographical aids, or, if one suspects that the writing belongs to a certain author, one may consult the monographs that exist about him. But if none of these aids gives the answer to the authenticity of the work, one has to search for external criteria: the testimony of contemporary or quasi-contemporary authorities, that may be found in direct references, in indirect quotations, in catalogues and lists of works, etc.

Internal criteria. Internal criteria are those features which are found in the work itself, such as style, diction, content, formalities, handwriting, versification, etc. They are peculiarities of such a personal nature, that they help to identify an author.

The method of identifying an author through these internal criteria is to compare the disputed work with a genuine work of the author to whom it is attributed or to whom we think it should be ascribed. Both works should be compared from the point of view of style, grammatical form, the use of particles, the manner of dating, organising the book, etc.

Such examination of the content may throw light on the work's authenticity. It may have allusions to one's state of life (layman, religious, physician, teacher, etc.). It may fit in with the environment that surrounded a particular author. Or, on the contrary, it may show such inconsistencies with the environment in which that author

lived, that the attribution of the work to him should be regarded as false.

With regard to documents, traditions, and other historical documents, Bernhein indicates four points as important in the examination of internal evidence: (i) Do the palaeography, the formalities, the diction and style of the source correspond with the palaeography, formalities, diction and style of the time to which it is attributed? (ii) Do the form and content of the work fit in with the overall characteristics of the place, time, and environment to which it is attributed? (iii) Is the content in agreement with facts, known for certain from other authentic sources? Do other sources exist which, because of their character, ought to have spoken of the facts contained in the source, and yet remain silent, which silence, amount to a virtual negation of those facts? (iv) Does the source contain some artificiality, which betrays its apocryphal character? For instance, (a) manifestly improbable origin, or transmission, as happens in legends; (b) imitation, or supposed utilisation of sources, which could not be available to the reputed author; (c) a tendentious tone, which indicates spurious motives.[1]

A critical examination of the internal criteria requires a comparison between the different texts of the reputed author and those of his age. This criticism is not free from dangers. It assumes in the student great sensitiveness to shades of meaning and style, a discerning talent, and vast erudition in the language, writings, authors and history of the epoch in which the work is supposed to have been produced. It is easy to attribute works to an author on the ground of internal evidence merely because of some accidental similarities that are perhaps found in many authors of the same period, or are explained by the existence of a common source. At times, only scholars who through long and patient studies have specialised themselves in an epoch, are in a position to give definite answers on problems of this kind.

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[1] BERNHEIN, *Lehrburch der Historischen Methode*, 371-372.

Incomplete authenticity

The student may be sometimes confronted with incomplete falsification: spurious additions or changes or omissions in an otherwise authentic source. In original manuscripts, the presence of erasures, deletions, differences in ink or character of letters may indicate partial falsification. One should investigate whether these are due to the author himself or to the intervention of an extraneous hand. Modern photographic equipment may help us to recognise the changes, and even to bring to light the original text.

Spurious additions in sources may be recognised by lack of logical sequence in ideas, inconsistencies, anachronisms, dissimilarities in style, etc. Lacunae in the text, lack of logical coherence, unnatural pauses, artificial joinings will indicate omissions in the original source.

Time and place

The date of a source, and also the place in which it was produced, are valuable elements of information. Dateless documents are very often useless for historical evidence and unlocalised documents present special difficulties for interpretation. When identification of the author is not possible, the determination of date and place is very important.

Sources very often indicate the date and place of their origin. When, however, they lack these data, the student should try to date and localise them with the help of external and internal criteria.

With regard to original manuscripts, experts in palaeography may be able to date a document from the handwriting; the quality of paper and ink used may also serve as a clue to its date. In any case, external evidence—allusions to, references to, citations of, the undated work in other sources of known date—should be brought forward, as also internal evidence—allusions in the text itself to events, persons, or dates, its similarity in ideas, literary treats, language, with other sources of a particular period. Perhaps, it will be only possible to fix the earliest possible date (*terminus post quem*), and the latest possible date (*terminus ante quem*) within which the work was produced.

The *place* of origin of a source may be divined from peculiarities of language, examples used, places mentioned, etc. The characteristics of handwriting is a clue for localising original manuscripts, just as the style of typography is for determining the printing-place of books.

Conclusions regarding authenticity. Summing up the external criticism of a source, the student should indicate what is a certain and what is only a probable conclusion. Sometimes, the only certain conclusion is that the reputed author is not the real author; or, the investigation may reveal with certainty only the epoch in which the work was composed, or the school to which its author belonged.

2. Integrity of sources

A genuine source must be at the same time textually intact, that is, it must present the text in the same form as it came from the author. Some errors may have crept into an original source in the process of transmission through manuscript copies, or some additions or changes may have been introduced into the text without any fraudulent purpose, and, therefore, without any intention of garbling the text with interpolations; that, for instance, is the case with glosses made by copyists which in the end are incorporated into the text. A source suffering from these defects is textually corrupt, either in a substantial or accidental way.

To discover the possible errors or doubtful passages of a text and to restore it, as far as possible, to its original correct form is the task of *textual criticism*. In many cases, the student will find to hand a textually integral source; thus, without wasting energy and time in working out a correct test for himself, he can work straightaway on the source, trying to discover its sense and value.

In the case of works edited by the author himself, the text, in its final correct form, is that presented in the latest edition. It may show a text somewhat different from the autograph or original manuscript, for the author may have introduced changes while correcting the proofs. Likewise, the second edition prepared by the author may not agree fully with the first, still less with the original manuscript.

For ancient works, the substantial integrity of the text is found in good critical editions. Scholars of merit have prepared critical editions of many standard ancient sources. Some of these editions are by any standard scholarly and fully satisfactory, their author following the best historical method and utilising for the edition all the existing manuscripts.

The student, however, may have at times to work on sources, of which no critical edition exists, or at any rate no satisfactory edition. In that case, he will have to face the task of preparing a correct text himself.

General criteria of integrity

Manuscript sources have come to us either in the author's original copy—holograph, or in a manuscript copy of it—apograph.

Holograph extant. Handwriting, when that of the author is otherwise known, physical features, and trust worthy extrinsic testimony may supply evidence as to whether the document is the holograph. When one possesses the original, one need not pay attention to copies, if any exist; a palaeographical edition of it is enough.

Often the holograph of a text is lost, and only its reproduction, either in a single copy, or in a number of copies, has come down to us. When many copies are extant, there are two possibilities: the archetype, that is, the manuscript from which the others were copied, has survived and is clearly known as such; or the archetype is no longer extant, or it is not clearly recognised as such.

A single copy (or the archetype) extant. When only a single standard copy remains, the problem is simple: that copy alone can be utilised and if the copy is suspected of lack of integrity, one may try to correct it by recourse to possible quotations of the source by other authors, or by conjectural emendation. Similar will be the case, when many copies are traceable to one single archetype and this is identified: the reading of the text should be based only upon the archetype; all other copies will be useless if the parent manuscript is still preserved in its integrity; only when the latter has suffered some damage after being utilised for the copies, may these help in restoring the text.

Many copies extant. It sometimes happens that numerous copies are extant and none can clearly be taken as the archetype. In this case, two possibilities arise: either there is agreement among the extant copies, or there is not.

Substantial identity in form, existing in copies belonging to different schools of thought, places, and times, suggests that the copies derive with substantial integrity from an early common copy or even from the original. The uncontroversial use of more or less identical copies by men of opposite thought is also frequently a sign of integrity. An equally safe criterion of substantial integrity is the fact that the text is presented identically in numerous translations, and in quotations, paraphrases and extracts. The mutual comparison of manuscripts may show great care on the part of all copyists in keeping to the original text: that, together with the other signs, is a great guarantee that the integrity of the text is preserved.

A more difficult critical problem will arise, when there is no substantial agreement among the extant copies. Then the full process of restoring the text must be gone through.

Process of textual criticism

The process involved in textual criticism comprises two major steps: 1) the *recension*, or critical evaluation of the manuscript tradition, which implies first the work of *tracing* the manuscript tradition, and secondly the *collation* of the manuscripts; 2) the *emendation* or restoring of the text to its original form.

1. *Recension*

a. *Tracing the manuscript tradition.* A written text can be transmitted in two ways: directly through manuscript copies—direct tradition; or indirectly through sources outside the text itself—indirect tradition. The recensionist should try to find both the direct manuscript tradition, and the presence of the text in other sources.

The first and more important task in recension is to find and catalogue all the existing manuscript copies of the text. At present, manuscript catalogues, published by libraries, archives and learned societies, may help in this work; old printed editions of the text, if any, though they may not be fully satisfactory, may guide us in the tracing of the manuscript tradition.

To know and determine the transmission of the text through indirect channels is also very useful. It will help us to discover the circulation of the source, and often to reconstruct the text itself. Quotations of the text may be found in other works of the same author, in contemporary or quasi-contemporary writers. Or the text may be found in the form of long excerpts and summaries in some anthologies—a practice common in ancient times—, or in works meant to serve as collections of commentaries, glossaries, paraphrases. Finally, the text may be extant in translations. All these forms of indirect transmission of a text should be investigated in the effort to find the best critical text.

b. *Collating the manuscript tradition.* The problem of manuscript tradition does not stop with the work of finding all existing traces of the text. It must be complemented by a critical assessment of the tradition. The recensionist should evaluate all the available manuscripts, determine their mutual relationship, and their relation to a common first exemplar (archetype or prototype). This critical examination and comparison of the extant copies is called the *collation* of manuscripts. A logical result of the collation is the pedigree of the manuscripts, that is, the family relation (genealogy, filiation, that exists between the various existing copies.

The process of collating manuscripts, when these are numerous, is not an easy one. The student will have to collate the copies in pairs, compare them especially in important and doubtful passages, and note down carefully the variant readings. Such elements as lacunae, abbreviations of words, meaningless changes of words, and improved style should be well analysed in the different copies.

This analytic and comparative study will determine the mutual relationship of manuscripts. Copies, for instance, that have the same defects or omissions in the same passages, and show the same characteristics, argue mutual dependence, or they derive from an earlier copy which bears the same characteristics, defects and omissions. They form a family or a group. The next step is to determine the relation between the different families or groups, and the relation between the copies of the same family. For this, agreements and disagreements in the various readings should again be analysed in the different copies: a

mistake, for instance, which renders the sense of a phrase unintelligible argues dependence. When two copies, whose relation is established, are written in different styles, the one with an improved style will in all probability depend on the other, for a copyist often endeavours to change the style for the better.

The final step in the process of collation is to determine which group of manuscripts is closer to the original archetype, and to bring to light the best manuscript. To this end, one has to compare the manuscripts with the ideas, style, orthography and characteristics of the language of the author, and of the time in which the original text was written.

With regard to the value of manuscripts, recent copies are generally speaking less valuable than older ones. A more recent copy, however, can be more valuable, if it is based on an older and more reliable copy, which is now lost. The manuscripts of one and the same family have not, as a rule, more value than their parent manuscripts.

2. *Restoration of the text*

As a result of the study of the manuscript tradition, the student will have now the different manuscripts, distributed into various groups. One of the families, and, within that family, one manuscript, which is considered closest to the original archetype, will serve as the basis for the reconstruction of the original text. Other manuscripts and families will help in the solution of doubtful readings, and (in the editing of texts) will make up the critical apparatus.

In the case of variant and doubtful readings, the student will have to select from among the various readings the one more likely to be the original one. In choosing, he should be directed by *external* evidence, such as the greater general authority of a manuscript, harmony of a reading with the sources used by the author, and by *internal* evidence, such as agreement of a reading with the context, the genius of the language, and the ideas of the author. The student should correct textual corruptions and errors, committed unintentionally by the copyists, such as wrong divisions of words, contractions of words, omissions of words, etc.

At times, it will not be possible to restore with certainty the readings of a passage, which obviously has deteriorated in the manuscript transmission. Then a *conjectural* reading, based on the context or any other probable evidence, is permitted. However, one should always be prudent in advancing conjectural emendations.

3. Derivation and dependence of sources

Th examination of the origin of sources involves finally the analysis of sources with a view to ascertaining their derivation and dependence. The value of a source obviously differs much, depending on whether it is an original source or a derived one, whether it has a relation of dependence with others or not.

Source-analysis applied to a philosophical or theological writing will reveal whether the content belongs to the dogmatic tradition or to a particular school, or whether it is a personal theory of the author. In historical writings, source analysis will establish whether the different testimonies are mutually related, dependent all on one and the same source, or whether they are independent sources.

The student should try to discover the different relations of the sources, and in case of dependence, try to reconstruct the chain, arriving, if possible, at the first link. Then only will he be in a position to determine the evidential value of each source. Independent sources will keep their full value as primary sources; others will take their value from them, because they are merely repetitions, or traditions handed down from generation to generation, one source, or generation accepting without question what was transmitted by the other.

The sources utilised by an author may be written or oral. He may use them critically, that is, accepting them only after passing judgment on their value, or without any personal criterion, recording simply what they say; he may be selective in their use, or he may accept them totally as material for compilation. Some writers indicate clearly the sources with which they are dealing; frequently, however, they do not give this valuable reference and the student must face the task of establishing the relationship of the sources in question.

The principles of source-analysis

Some of the principles mentioned above with regard to the collation of manuscripts are also helpful for source-analysis. We may add here the following, confirmed by psychology and experience. It is morally impossible that two independent persons, while narrating or describing the same facts, agree as to their content, and use the same or very similar sentences, fix their attention on the same points, not only essential, but even accidental, show the same criterion in the selection and distribution of facts.

When such agreement exists it shows that the sources are mutually related; one is derived from the other, or both are derived from a common source.

Mutual relation is shown with certainty by agreement both in *content* (viewpoint, digressions, narratives), and in *form* (style, distribution of data). A perfect agreement in content of itself argues mutual relationship. In doubtful agreement as regards content, and a definite difference in form, the conclusion will not be so clear.

Agreement in content and form with an older source is an indication that one is derived from the other wholly or partially. Borrowing from another source is betrayed by disruptions of the unity, by discrepancies with the style of the author and with his environment, by omissions, etc.

Relations of dependence between sources may be rather complex. When, for instance three sources ar involved, each one of them may be the original source of the other two, and, besides, the derivation can be either direct or indirect. Taking, for example, three sources A.B.C., and assuming that A is the original, B and C may have utilised it separately, or C may have utilised it through B or vice versa.

When there are more than three sources the variety of possible relations is great. Tact and care will be necessary in the student to discover which are original and which are derived, and in what mutual relation are they derived. The critical analysis will perhaps help in the reconstruction of the original first source, which may be lost.

B. INTERPRETATION OF SOURCES

The right interpretation of sources includes the correct understanding of their *verbal* and *real* meaning; verbal, that is, grammatical and lexicographical; real, that is, the sense that the text has here and now.

1. Verbal interpretation

The basis for any interpretation must be the grammatical and lexicographical meaning according to the usages proper to the language, time, place, taking account also of the author's idiosyncracies in the use of words. All these elements may affect the morphology, syntax and sense of each of the words.

Verbal interpretation must explain words and sentences according to their meaning at the time the source was produced. Languages undergo progressive evolution. Thus, for example, one may not interpret Latin writings of the Middle Ages on the basis of classical Latin alone. The meaning of many words have often changed, for instance, the words "episcopus", "sacramentum" in theology.

Moreover, the terms are to be understood in the sense they have in the particular branch of science to which the source belongs. Some words have a technical meaning, which demands a technical interpretation. There are words whose meaning differs according as they are used in theology, canon law or in common conversation.

Then it is obvious that each author and each region may have peculiarities in the meaning they attach to words. A psychological and topological interpretation should, therefore, be applied.

Philological tools. A correct linguistic interpretation requires on the part of the interpreter a good philological training. In any case, the interpreter must have recourse to such philological tools as grammars, dictionaries, etc.

Translations. It is pertinent to refer here to the danger involved in the use of translations when one wishes to get the accurate meaning of a text. Experience shows that not all translations are perfect, and hence, the dictum: "distrust translations", which at least suggests that the original should be preferred to a translation. On the other hand, a translation done by a competent hand may help us to understand the meaning of a text, because a good translation presupposes the work of literal and real interpretation.

2. Real interpretation

Verbal interpretation is only a beginning of the study: one has to attend to many other aspects before venturing to determine the sense which the words and phrases have here and now.

Hermeneutical principles

The following principles of interpretation will prove helpful in the effort to determine the real meaning of a source.

Context. We must look to the grammatical context—the weaving together of the constituent words—, the syntactical context—the part or parts of the discourse preceding or following the text in question—, the logical context both proximate and remote—what the author wants to explain or prove. The law "of context", examination of the context, is one of the most important principles of

correct interpretation. Writers who to defend a preconceived idea distort the meaning of a text, do it most frequently by detaching it from its context.

Similarly one should examine parallel passages, whether verbal or real, whether of the same author or of authors closely related. They may throw light on the real meaning of the text in question.

Character of the source or the literary genre of the same. It is obvious that words will be understood in a different manner according as they are used by a scholastic philosopher, a poet, a preacher, or in a novel, a historical document, an official document, a formal writing, etc. Within the same literary genre, e.g. historical writings, one may not interpret in the same manner documents written at different times, for instance old historical narratives and modern historical writings.

Purpose of the writer. The purpose that the writer has in mind and the audience whom he is addressing, can help to determine the exact meaning of the words. This will show, for instance, whether the words are to be taken in their technical sense or in the common meaning.

Person of the writer. A knowledge of the person of the author and his life may help us to understand his writings. The country, the cultural formation, the mentality, character and temperament, the school of thought to which he belongs, the polemics in which he has taken part, etc. are all elements that prove useful for the correct interpretation of an author.

Concrete circumstances surrounding the work. Everybody is a child of his time; it is very difficult not to be influenced by the surrounding intellectual atmosphere. While analysing a source, one has to prescind from the theories and circumstances of the time in which one lives, and place oneself in the circumstances and environment under which the source in question was produced; the reason for the writing of the work, the state of controversies at the time, the intellectual trends in vogue then, the prejudices, etc.

Combining all the aforesaid data with those of the philological criticism one should clearly see what is exactly the meaning of the source in hand.

Interpretation of experiences and facts. What has been said so far, must be applied, *mutatis mutandis*, to any fact which, in a philosophical, social, scientific research, can be regarded in some sense or other as a source; take for instance, the instinctive manner of acting of an animal, changes of merchandise, chemical reactions, manner of cell-division, interior states of soul experienced in prayer. First of all, the texts transmitting to us personal experiences or observed facts, should be studied critically. Then the meaning of such personal experiences is to be determined with great care. The observation proper should be distinguished from the spontaneous interpretation of the observer; at times, the latter, influenced by the observer's and even affective dispositions, will be something added to the fact itself. Finally, one will examine the value of the facts in order to solve the problems in question; that is to say, the consequences which are logically drawn from the observation.

C. AUTHORITY OF THE SOURCES

The last step in the appraisal of source material is to determine its internal value. The criteria for studying the authority vary according to the science to which the source in question belongs. We can see here the truth of the principle that it is not the method which defines a science, but the science that indicates the method to be followed.

1. Philosophical and theological sciences

To determine the philosophical or theological value of a source, the criteria to be used are philosophical or theological respectively.

Then, obviously, to determine the value of the opinion in question, one must examine whether that is the definitive mind of the author, whether he defends it as the fruit of his own personal study, or merely admits it on the authority of others without any personal reflection, whether the author is competent in the matter, etc.

A somewhat similar criterion is to be followed to determine the juridical value of a law or decision: one must examine whether it is a common norm, or a special decision regarding a particular place or people, etc.

2. Sociological and natural sciences

The principle is the same: the witnesses, facts or their observation must be examined with the criteria proper to each science for the evaluation of its arguments. For example, in the matter of statistics, the work of research should not stop short with the collection of all the available data, but should include the study of their value in stating a law or determining a fact. If it is a question of observations and experiments the study will be complete only after seeing whether from such observations a general law may or may not be inferred.

3. Historical questions

The value of a historical source comes from its quality of communicating data in their objective truth. Its conformity with truth is what makes a testimony trustworthy, and what gives it an evidential value. Historical sources are very much diversified in character, and the problem of establishing their historical credibility varies according to each source. We refer especially to strictly informative sources which aim at communicating data of a strictly historical character: the value of sources not strictly informative, such as historical novels and plays, sermons with statements of a historical nature, is not to be judged only by historical objectivity, as this is not their primary end. We shall give here only some general principles that have to be reckoned within the difficult work of assessing objective historical truth.

Historical sources and error

Informal sources or remains, such as relics, transmit of themselves their testimony about the past. Regarding such sources the only problem is their correct interpretation. They are *ipso facto* objective and trustworthy, and error can only enter in from our reading and interpretation of them.

Formal sources, written as well as oral, which by their nature contain historical information consciously communicated as such by a witness, are subject to the possibility of error. The problem of credibility is, therefore, present in them all.

Error can enter into a historical testimony if any of the different processes are vitiated by which information is acquired and communicated to others. First, the information obtained may not correspond with reality, due to some defect in the witness's sense-perception, in his powers of internal reconstruction of the fact or in his ability to communicate the information to others by way of

words, writings or other medium. Functional disorder of the senses, absence of conditions for proper sense-perception, emotional and psychological disturbances, as in the case of illusions and hallucinations, will make the sense-perception erroneous. Similarly, lack of recalling power, inability to analyse perception, or uncontrolled emotions will affect accuracy in reproducing internally the fact or event. Finally, deficiencies in language, the influence of alien suggestion, the length of time which has elapsed since the facts reported took place, can affect the accuracy of the information.

All these elements, that can affect the perception, internal synthesis and outward expression of a fact by a witness, obviously influence his knowledge of the fact. Elimination of the dangers of obtaining erroneous information is the first postulate of credibility for a source: the witness must have been able to know the truth.

Secondly, the witness himself, though possessing true information may present for various motives a false testimony. Then there is the lack of veracity, the presence of deception.

Fortunately there are means to check those different processes by which historical information reaches us, means to ascertain the knowledge and veracity of witnesses, the credibility of a source. That makes it possible to arrive at truth in history. Specialised historical methodologies give the directions for assessing objective truth in the different formal written sources, such as annals and chronicles, biographies, memoirs, autobiographies, diaries and journals, letters, newspapers, works of propaganda, inscriptions, and oral sources, such as oral traditions both of recent and emote events, legends. Here we shall give the general principles for establishing the credibility of witnesses.

Credibility of the immediate witness

The testimony of a witness is trustworthy when his knowledge and veracity are well established. One must inquire whether the witness was in a position to know the truth and whether he intended to tell it, whether he deceived himself and whether he wished to deceive others.

Knowledge. An inquiry into the qualities, the condition of life of the witness and the circumstances that could have influenced him in the apprehension and recalling of the fact, will show us the competence of the witness as regards knowledge of the fact.

Was he a normal or an abnormal person? Were his faculties of observation, of reflection, of memory in a normal condition? Were there any external causes that could prevent him from knowing the truth, or at least the whole truth? Was there any censorship by the civil authority? Could the influence of his surroundings, of alien suggestion, impose a qualified perception of the fact? Could the influence of prejudices, emotions, personal attachment influence the process of internal synthesis and reproduction of the fact? Was the event observed simple, or very complex and thus necessitating a delicate power of observation:

The conclusions of both individual and social psychology regarding the influence of different factors in the observation and interpretation of facts should be taken into consideration here. Age and sex, for instance, are important factors: a man judges with more care, whereas a woman observes more vividly; in a mature man the interpretation of a fact may be almost simultaneous with perception. The more attentive and less passionate the observation is, the more perfect it is. If a report is taken up by a group or mass, the correct observation and understanding is in inverse proportion to their number: masses are easily subject to illusions, hallucination and suggestion, especially in times of crisis.

Veracity. In order to estimate the veracity of a witness, one should not be satisfied with a mere "air of sincerity" surrounding the witness, but should estimate his character, his purpose in giving information, the nature of the information itself, the external circumstances surrounding the information.

What was the temperament and character of the informant? Honest, simple, candid, disinterested, inspired by religious motives, or mendacious, pathological, sophisticated, ambitious, unscrupulous? What was his purpose in communicating the information? To justify himself, to excuse himself, to attack someone, or simply to narrate the fact as it took place? Was the nature of the information such as to be of some advantage to the informant, and party, or did it contain things which could be a source of discredit and disadvantage to him, or which simply did not affect him? Did the information concern public events, in which falsification would not have been possible, without being exposed by other witnesses?

When, according to these principles, the investigation of the character of the witness and his motives and the nature of the information exclude any reasonable doubt about his veracity, his testimony should be accepted as truthful. Because, "no one tells a lie without cause".

Credibility of a mediate witness

Often historical sources contain reports not by direct and immediate witnesses of the facts, but by others who simply received information from them: these are mediate, indirect, second hand witnesses. There may be only one such intermediary between ourselves and the immediate witnesses, or there may be several.

In the case of a single intermediary, first the knowledge and veracity of the direct witness from whom he learned the facts should be ascertained; then, the trustworthiness of the intermediary witness should be established: his ability to understand and accept critically, not blindly, the report of the first witness, his care in reproducing it accurately, and his character and other signs of veracity.

When the information is passed on us through the medium of several indirect witnesses, each one should be subjected to the proof of credibility by the same process as was applied in the case of a single intermediary.

Credibility of several immediate witnesses

Frequently several witnesses (or sources) testify to the same fact. The value of such concurrent testimony depends on whether they are mutually dependent or independent. Source-analysis will determine that.

Several sources mutually dependent. The multiplication of sources, mutually dependent in their testimony, does not add confirmative value. Mere repetition of a news item by several persons, all dependent on the same common source, will not add greater guarantee than that which the single source has in itself. The same takes place in historical testimony: "Testimonies are to be weighed rather than numbered."

Several independent sources: When they mutually agree. Should two or several independent sources agree positively in several elements and details, which are not necessarily connected with the event, the historicity of the fact cannot be denied. Their mutual agreement can be explained only by the objectivity of the fact.

The evidential value of concurrent independent testimony is therefore unquestionable. It may even happen, that the testimonial concurrence of several sources, which taken individually do not produce historical certainty, results in proper certainty, for their mutual agreement is possible only on the assumption of the objectivity of the fact attested. Concurrence of testimony has confirmative value not only in the case of several agreeing formal sources, but also in the case of formal sources agreeing with informal ones. There are frequent cases in history in which a written source, or an oral tradition is corroborated by physical remains, such as inscriptions, archeological vestiges, or, on the contrary, a concrete interpretation of remains is confirmed by formal testimonies.

Several independent sources with conflicting testimony. The first thing to do is to see whether the disagreement or contradiction is real or merely apparent, coming from the different angles of observation taken by the different sources.

When the contradiction is real and conciliation is not possible, one should estimate the relative credibility of each source or testimony. The study of each witness may throw light on his greater or lesser reliability; or there may be some objective elements, independent of the subjective condition of the witnesses at the time of their conflicting testimony, that will suggest which testimony is objective.

When the analysis of the sources does not result in a certain conclusion as to which is trustworthy and which unreliable, one will have to suspend judgment as to the historicity of the fact.

Credibility of a single witness

In the presence of a single source, or a single witness, the first thing the historian has to do, after establishing the credibility of the witness in general, is to examine whether the conditions of the time, culture etc. confirm directly or indirectly the fact in question; if such corroboration exists in one way or another, one must accept his testimony as true. In fact, it is then as if we have two concurrent testimonies.

When no confirmation, direct or indirect, of the single testimony exists, it will be rather difficult to reach historical certainty. If, however, the competence of a witness is positively proved on all grounds, one may accept his testimony as true.

The argument from silence

When, concerning a fact, there exists only the testimony of a single witness, or an oral tradition which appears in recorded history rather late after the event, one has to explain why, if the fact is true, contemporaries do not testify it. In other words, one has to see whether the argument from silence—"ex silentio"—has application there, whether the silence of contemporaries suggests the non-reality of the fact. The argument from silence is called by some authors the negative argument, because from the silence of contemporary sources one concludes to the non-reality—the negation—of the fact.

A writer's silence on a disputed fact may be due to the

non-existence of the fact, or to ignorance, or to voluntary or involuntary omission on the part of the writer. For the argument of silence to be valid, therefore, two conditions should be verified: (1) there were contemporary writers who would certainly have known the fact, had it been such; (2) knowing it, those writers would certainly have referred to it. Hence, if they did not mention it, the only explanation is the non-reality of the fact.

The argument from silence is a useful way of evaluating single testimonies or late traditions. But its use demands great circumspection and caution. One should determine with great care whether those two conditions are fulfilled in the case in question. One cannot argue simply from the general silence of writers of an entire epoch, but only from the silence of qualified authors. One should examine whether the fact was of real importance, easily knowable to the authors in question; whether the omission of the fact cannot be explained, given the purpose of the same authors in writings and the circumstances under which they wrote.

In judging the existence of those two conditions for questions of ancient times, one should be aware of the difference existing regarding facilities for news communication between ancient and modern times, and between modern and ancient criteria in narrating things. Events of real importance could be unknown in ancient times due to poor communications; and ancient writers had a different criterion from ours as to which events should be recorded in writing.

On the other hand, when the conditions mentioned above exist, the silence of even one qualified author may be a valid argument for rejecting a fact. The silence of qualified authors cannot be simply overlooked by the general remarks that perhaps contemporary documents have been lost, or that there was no custom of recording facts. This should be proved positively. Otherwise it would be impossible to arrive at historical certainty. Likewise, one may not accept an oral tradition as historically proved by the mere fact that it has been "in possession" of some people for a long time: the tradition shonld be positively evaluated, its late appearance in recorded history positively explained. Otherwise, though the tradition may be objectively true, the historian will not be able to reach historical certainty about it.

Conjecture, hypothesis, certainty

At the end of this chapter on the appraisal of sources, it may be good to recall the different degrees of certainty which the historian may reach in the different steps of historical criticism.

At times, the student will have to walk by the path of conjecture only. Conjecture is a supposition regarding individual facts or phenomena, based on insufficient evidence. We have conjectural emendations and interpretations of a text, conjectural adding of details. It belongs much to the field of intuition and guess. And it must be used with great caution to avoid false or gratuitous reasoning.

The student again regarding whole bodies of facts may walk for a time in the path of hypothesis, which is a probable supposition, born of scientific, though not fully certain, reasoning, and which is apt to explain the ensemble of facts and their mutual relations. Historical, as well as any other scientific research, makes continuous use of hypothesis, both explanatory, as a tentative explanation of a phenomenon, and descriptive, a practical framework for giving coherence to scattered data. A working hypothesis is legitimately admitted both to explain provisional facts and to guide investigation. Hypotheses, however, should be formulated only on solid grounds; they should be stated as such, and never as established facts, and they should be abandoned whenever they run counter to a single well-established fact.

Finally, hypotheses are not an end in themselves. The historian must try to reach certainty. An hypothesis will become a certain thesis, when it explains all the facts in question, and when it is the only explanation possible.

Chapter 18

ADVANCED SCIENTIFIC WORK—SYNTHESIS AND EXPOSITION

IN ANY RESEARCH, a major step is reached when the time comes for synthesising all the data available, so as to make a unified whole. All the data have to appear in their proper degree of certainty, and in their inner mutual relationships. Conclusions will then naturally follow, bringing the work to the last stage: presentation of the results to the public.

1. Synthesis

Reading and analysis of the sources should normally result in a synthesis, where the student gives his final answer to each of the problems which has arisen in the course of the work. Only thus is there scientific progress

Merely to arrange a mass of data or to present the elements for the solution of a problem, without an attempt being made to solve it, is not enough. To propose the pros and cons of a thesis, to collect the opinions of others, to gather documents necessary for the study of a problem is already something useful. But as long as a solution is not attempted the work will remain subsidiary or preliminary.

The mass of evidence demands interpretation. The research-worker, once the material is collected and analysed, is expected to take the final step: to formulate a personal judgment, to offer a synthesis and a conclusion. As he has done all the preliminary work, no one is better qualified to take this final step than he is.

2. Final conclusions

The final conclusions can be drawn only at the end of the study. During the work of analysis, the mind must remain open to any solution the documents may suggest.

Conclusions are to be stated clearly and accurately. Doubtful metaphors and loose general statements are to be avoided. Moreover, conclusions should be duly qualified, giving each its own degree of certainty or probability. Mention can be made of problems that are still awaiting solution. This, besides being a homage to the truth, will afford occasion for other scholars to continue the work. Science is not the work of one man alone; it offers scope for all, and each scholar has the duty of helping others.

Finally, the conclusions should be stated with courtesy towards previous investigators, and with modesty regarding our own work. Scholarly writing demands that the tone be courteous and the language modest.

3. Plan of exposition

In the formulation of the plan, we may distinguish several stages. Regarding most subjects, a "plan of research" can be proposed as soon as one knows the material at one's disposal. This plan is by nature tentative and provisional. But it is necessary as a guide to reading, note-taking and research activity. As it limits to some general headings the proceedings of investigation, it helps the student to avoid loss of time and energy.

As the work proceeds, adjustments and modifications will have to be made in the original plan. Changes should be made, keeping, if possible, the logical order of the division of the matter, until the student is able to formulate a definite plan for the composition of the text.

The definitive plan must have the qualities of clarity, logical order and proportion. *Clarity* means that the general reasoning is shown clearly throughout the whole work, acting thus as a backbone that sustains the thought. *Logical order* among the different parts of the work supposes that the author has a synthetic vision of the whole, and of each part, of the topic treated. Finally, *proportion*, that is to say that each part and aspect should be treated in accordance with its intrinsic value; essential elements, as essential, and accidental as accidental. This prevents the writer from being incomplete in some parts, and over-diffuse in others.

4. Exposition

The importance of a good presentation of the results of the research should not be underestimated. A defective and imperfect presentation makes an otherwise excellent work lose much in value. Here we offer a few remarks on the *internal* qualities of a good scientific writing; in the next chapter, we shall treat of the *external* qualities required when it is presented in the form of an article or book.

General qualities. The exposition of the results of research is to be distinguished by *truth*, *clarity*, and *moderate conciseness*.

The value of a scientific work is judged by the degree of objectivity that the exposition presents. Truth has its rights and these are to be respected no matter what other opinions or preconceived ideas the writer may have. The exposition must be clear. The work will be persuasive and fascinating mainly on account of, and in proportion to, its clarity. Clarity is the result of precise ideas, and limpid style.

Finally, the reader expects also a moderate conciseness, which, of course should not be taken so far as to make the work obscure. There is a danger to which the student especially the young investigator is exposed when, after having worked hard at gathering the material, he sets about synthesising the results of his research. The danger—you may call it temptation—is to force into his writing everything that he has collected. Not all resist this temptation; they fill up the work with many unnecessary quotations, digressions, and data irrelevant to the final synthesis. The excess of unnecessary material results only in obscuring the central theme of the research, and tiring the reader.

Literary form. First of all, the language of a scientific work must bear the stamp of absolute accuracy. Solecisms and grammatical or stylistic mistakes tell on the beauty of the scientific work just as lack of cleanliness and good manners on the behaviour of people. It should be noted here that a writer, when perusing sources and works written in languages other than the one used by him, runs the risk of using words and turns of phrase proper to those languages. Hence a special effort is needed to write with propriety in his own language, while doing full justice to the ideas of foreign authors.

Moreover, the style of a scientific work should be characterised by elegant simplicity. Simplicity is often a requirement of clarity. Affected and rhetorical ways of writing do not make for clarity, and therefore are to be avoided. But simplicity is not to be identified with slovenliness. It must be accompanied by elegance. The style must be well arranged, correct, free from vulgar words and phrases, and as far as possible adorned with images and other devices proper to a noble style.

Finally, in modern scientific, and even literary language, the phrases must be precise, short, harmonious. Long sentences tire the contemporary mind, and end by diverting the attention from the main object. Verbosity, a flood of words to express an idea, is a defect in a scientific style. In regard to literary images, evidently the wealth of vocabulary in most languages comes from figures of speech and metaphors. Nevertheless, excess in their use may endanger clarity. Perfection of style is a result of richness of thought, and a harmonious combination of words.

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